

Flight, May 18, 1912.



FLIGHT



First Aero Weekly in the World.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

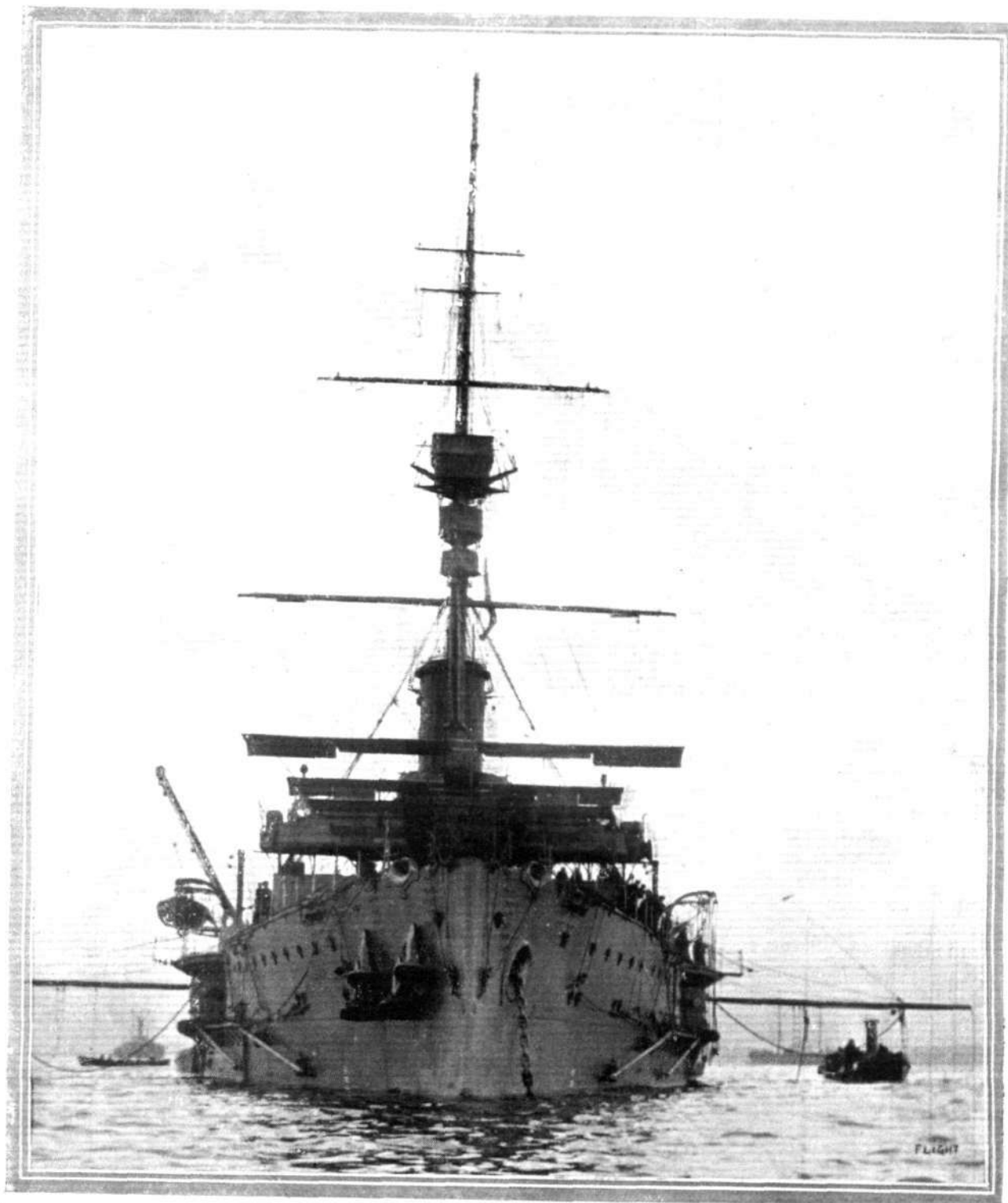
OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM.

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A front view of the hydro-aeroplane mother vessel, "Hibernia," with the Fleet at Weymouth, showing the Navy aeroplanes in place on the special launching platform.

EDITORIAL COMMENT.

The Investigation of Accidents.

Readers of FLIGHT will have gathered from the official notices appearing in its columns that the Royal Aero Club is keenly appreciative of the need that exists for the thorough and systematic investigation of all flying accidents which are of at all a serious nature. To that end has been established a Public Safety and Accidents Investigation Committee—the title is rather a cumbrous one, perhaps, but it is its work rather than its name which matters. We commend the Club on its move in what is unquestionably the right direction which for a very long time it has had in contemplation, and in our congratulations we would also include the Aeronautical Society, which is working hand in hand with the Club and whose collective scientific nature should prove simply invaluable in unravelling the often obscure causes of those unfortunate occurrences which all interested in the progress of aviation have sometimes to deplore. It will be remembered that Major-General Ruck, C.B., strongly advocated the institution of such a body at one of the earlier meetings of the reconstituted Aeronautical Society, and this has led to the co-operation of the Society with the Club.

Already a move has been made by the Committee which ought to result in valuable information being recorded. Notices have been issued to all the different flying grounds, soliciting the co-operation of aviators in the prevention of dangerous flying and asking for systematic reports by experts on all accidents and, as far as possible, of their causes. So far, so good. It has also been decided by the Committee to appoint officials at various centres whose business it will be to enquire into and report upon all accidents, and to that end the Committee invites offers of assistance from experts and those with technical knowledge, who need not necessarily be members of the Royal Aero Club. It hardly needs saying that with Col. Holden at its head, the new Committee will get to the root of its business in the shortest possible time. That is to say, the Committee itself will beyond all doubt do its own work in the most thorough manner and aviation will be all the better for its work.

But it is as well to examine the weak points of the scheme as well as the strong. A Committee such as this may be excellent in its composition and may do excellent work of its own, but that work will be terribly handicapped unless it can command the services of the best possible experts to report upon the subject with which its work deals. The whole point, so far as the prevention of accidents is concerned, seems to be the thorough investigation of those that do happen and the ascertaining of the root causes. In order that the investigation shall be of value and not positively misleading in the deductions derived from such investigation, is the securing of evidence from responsible persons who were actually on the spot. It, naturally, cannot be expected that a member of the Committee will be present at every accident, but by the appointment at every aerodrome of a Club official the probability will be largely increased of there being present at least one qualified and responsible person who will furnish some of the data required.

It might be argued that there is usually some person present at a time of accident who is able to furnish such

a report as the Committee would find useful in its investigations and that, therefore, the appointment of these officials is a work of supererogation. Indeed, we cannot recall a single accident to account for which there were not at least a dozen theories advanced by actual witnesses to account for the occurrence. The main point, however, is that all this is devoid of system and it is systematic work which that is required, and this can only be achieved by the institution of a system. That, we think, is what the Committee is going to build up, and we would add our own solicitations to those of the Club that all our readers who feel themselves qualified to assist in this work of investigation should place themselves at once in communication with the Club.

There is just one delicate point to which we feel it our duty to direct attention. The investigation of accidents involves, naturally, the detailed inspection of damaged machines, and it will perhaps not be unnatural if the manufacturers of such machines exhibit a little touchiness upon the matter of the identity of the investigator. Therefore, it behoves the Committee not to be too hasty in the appointment of its investigators, lest some of these appointments of men whose qualifications are undoubted may, in other respects engender somewhat of a sense of inquisition in the minds of some who are most likely to be affected by the Committee's proceedings. There is no need to labour the point—it is sufficiently obvious to all who are on the inside track of things, and we are confident that, the Committee's attention having been drawn to it, the point will not be lost to sight.

A Public-Spirited Campaign.

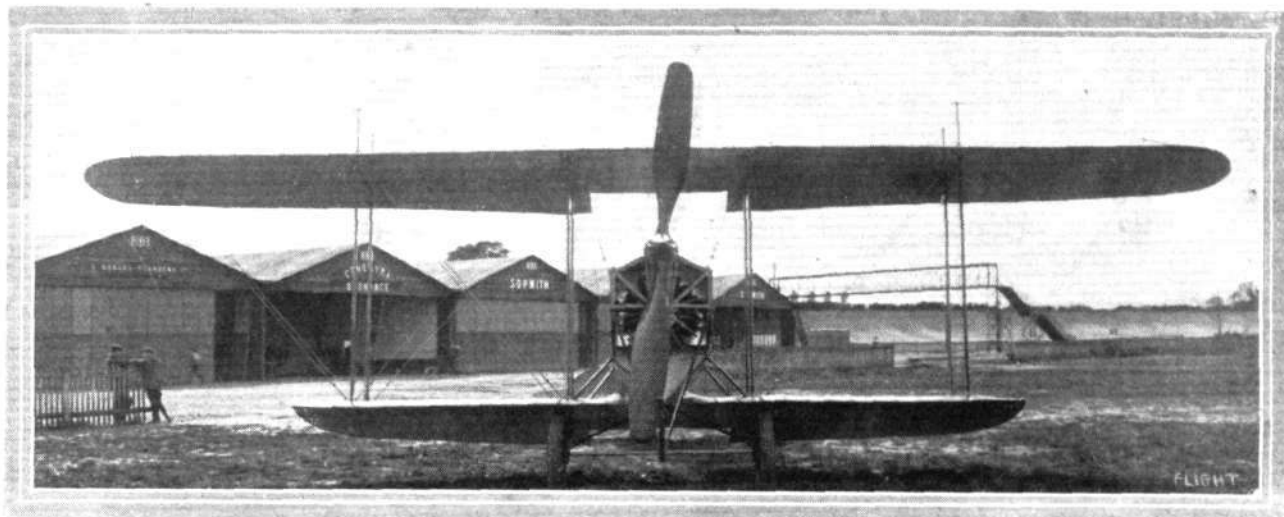
One of the points we have striven to make when dealing with the subject of aerial defence is that only by a real awakening of the public mind to the possibilities of the aeroplane as an instrument of attack and defence can the hands of unprogressive authorities be forced and those of the more enlightened be strengthened until our gravest needs are satisfied. The necessary awakening must either be left to work itself out by the gradual processes of time—which would mean a loss of extremely valuable time and opportunity—or it must be given a decided fillip by bringing those possibilities of which we have spoken right home to the doors of the people. The last is by far and away the better course, but it is attended by many difficulties, the chief of which is the financial one.

There is no public money for an advertising campaign—for that is what it amounts to—and it would be outside the scope of any institution which exists to-day. Therefore the only way is for some public-spirited person or corporation to do what is needful, and into the breach has once more stepped the *Daily Mail*. We make no scruple of saying that we honour and congratulate Lord Northcliffe and his colleagues for what they are doing. Already British aviation lies under a heavy debt to them, a debt which will have been increased almost immeasurably when M. Salmet has completed the programme which has been mapped out for him. Indeed, it is not aviation but the nation itself which will owe a deeper debt than is realised by many.

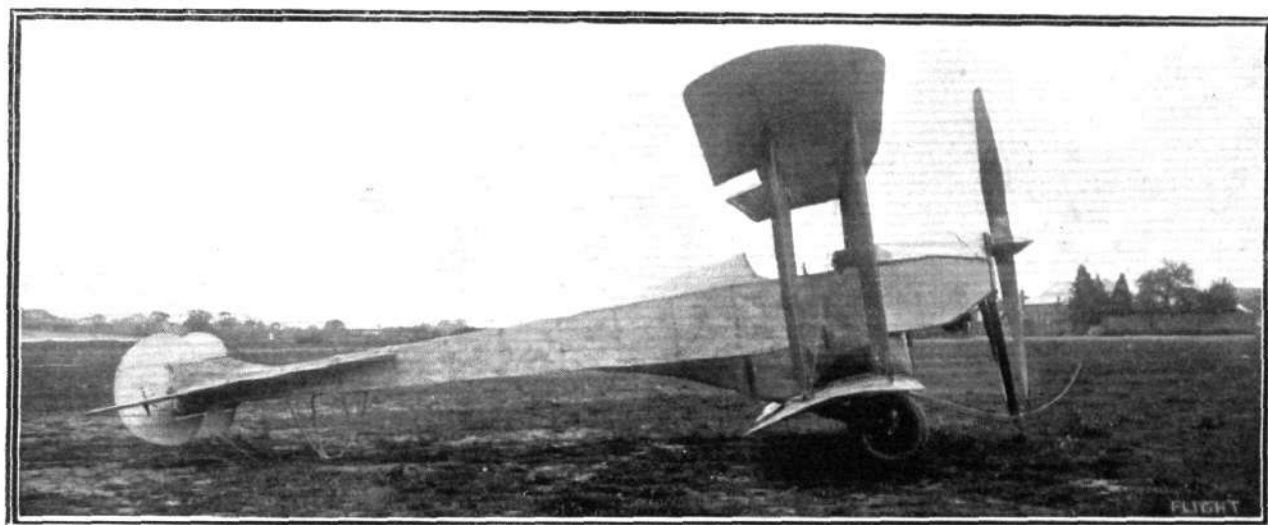
THE COVENTRY ORDNANCE BIPLANE.

THE first impressions one gets of the New Coventry Ordnance Biplane are its marked originality, its excellence of design and construction, and its businesslike—more than that—its warlike appear-

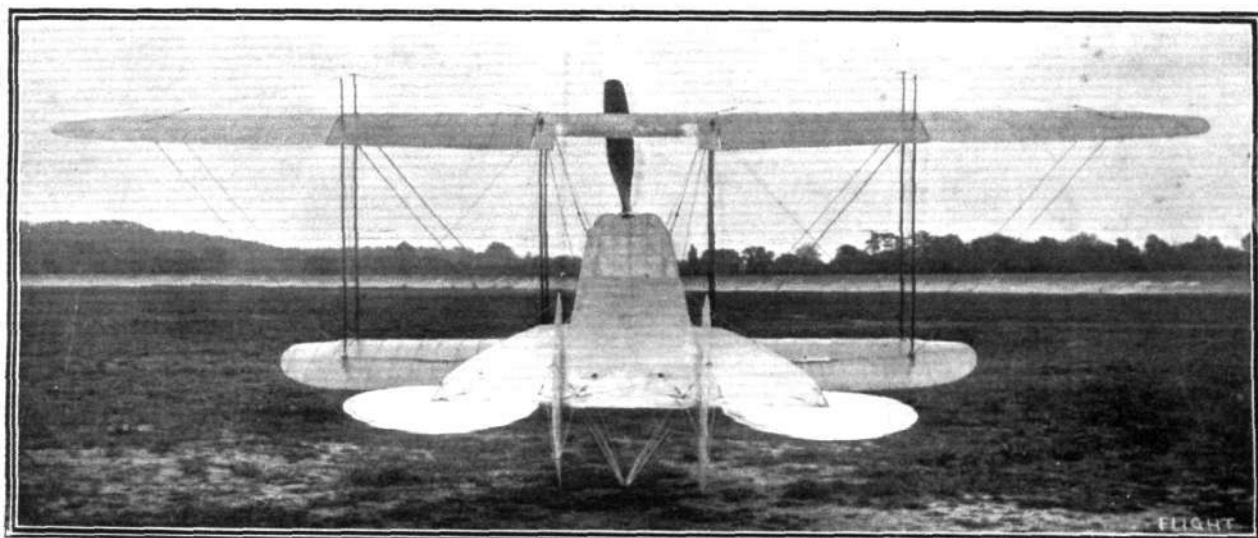
ance. It has a certain atmosphere about it that brands it as a machine intended for harder and more serious service than mere aerodrome work.



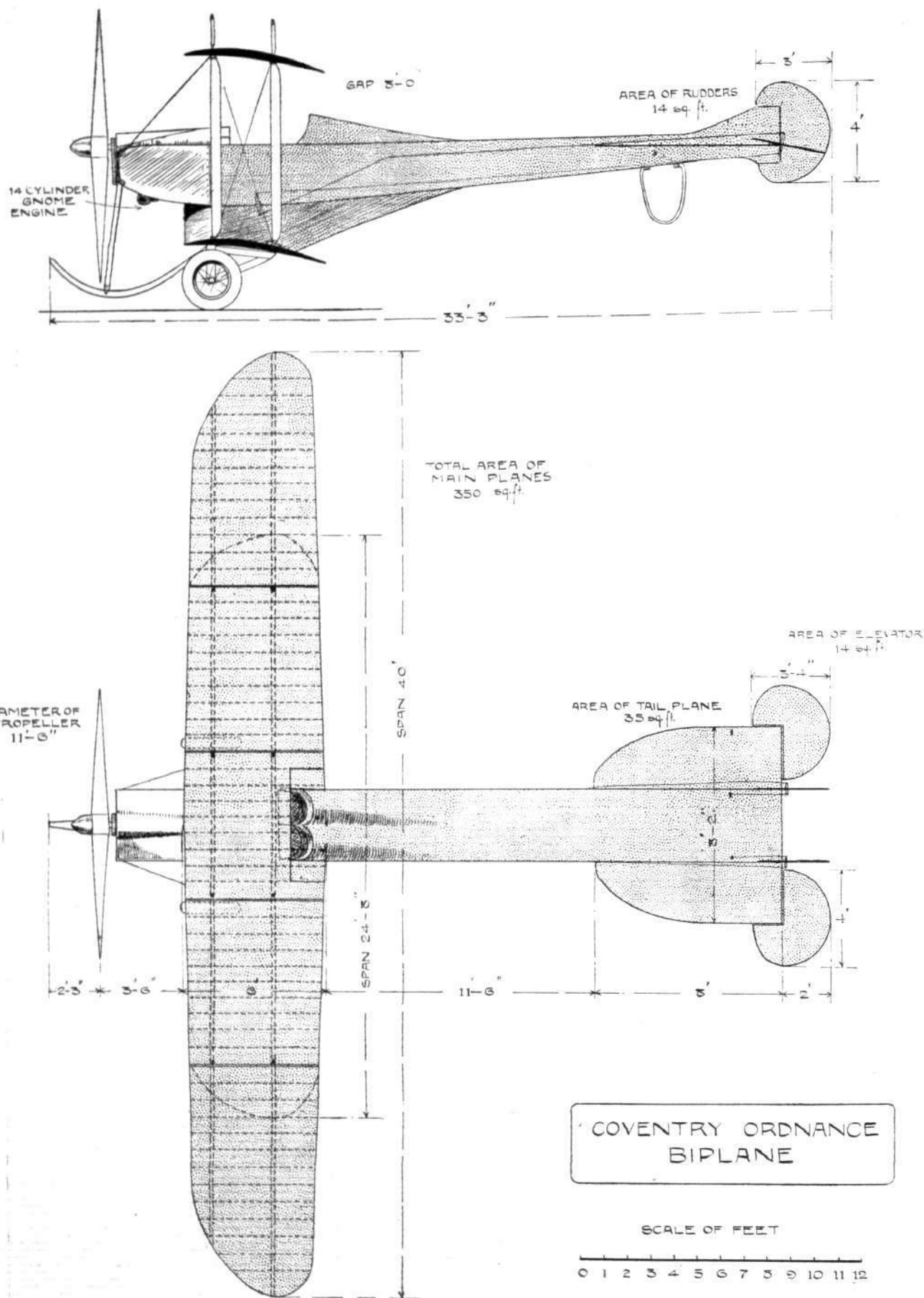
The Coventry Ordnance biplane, as seen from in front.



THE COVENTRY ORDNANCE BIPLANE.—Side view.



The Coventry Ordnance biplane from the rear.

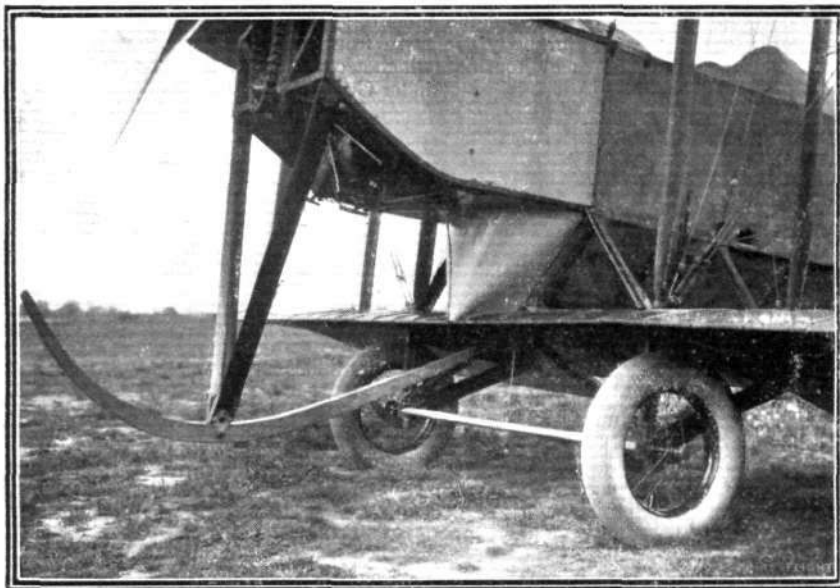


THE COVENTRY ORDNANCE BIPLANE.—Plan and elevation to scale.

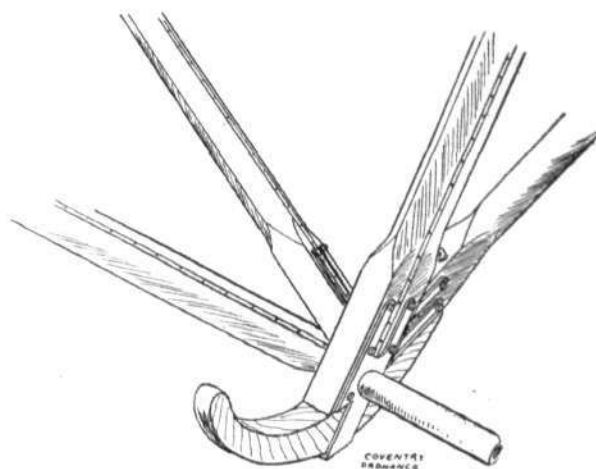
It was designed jointly by Mr. W. O. Manning and Mr. Howard Wright to fulfil War Office requirements. And from the tests that have already been carried out—it has lifted with perfect ease two passengers over its full complement, four persons in all, and that with the ignition of its 100-h.p. Gnome motor very much retarded, and with its extra passengers standing outside on the *cellule*, where they each were absorbing a considerable power in extra head resistance—we think we can safely predict that it will have no very great difficulty in showing itself to advantage in the military competitions.

Second impressions single out for notice the large gap of 8 ft. between the main supporting surfaces, the hugeness of the propeller, it measures eleven and a half feet from tip to tip, and the neatness of

the centre to 5 ft. at the tips. The extra span of the upper surface is made up by an extension on each side. These extensions are virtually complete monoplane wings braced to the rigid plane structure by king posts and steel cable on top, and by stranded steel cable below. They are arranged to warp for the correction of lateral balance. Both their tips and the tips of the lower plane are finished off like those of the Borel wing in order to obtain a very powerful warp. The warping is operated by stout stranded steel cables passing from the rear boom of one extension under stream-line pulleys on the lower plane, straight through to the pulley on the opposite side and up to the other extension. The operating-wires from the control-wheel are "tapped" on to this main cable, for by this arrangement the move-



Details of the front section of the machine, showing the engine mounting, the main hickory skid, and the unsprung landing gear.



Detail of the Coventry Ordnance landing chassis, showing the small hickory skid intended to protect the chassis should anything happen to the wheels. The wheel is omitted to avoid complication.

the landing gear, unsprung except for the resiliency that its large six-inch tyres afford.

A factor of safety of 12 has been worked to throughout, and probably it was the consideration of how to obtain that safety factor without having to resort to too much weight of material that influenced the designers in deciding to make their machine a double-decker.

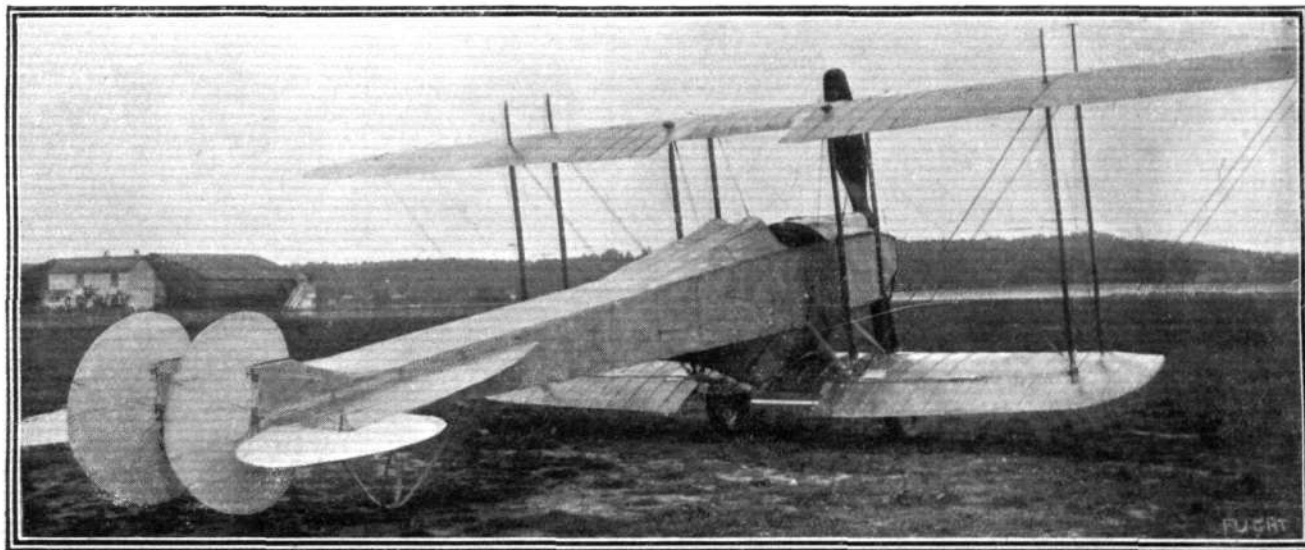
It was built throughout at Howard Wright's original works at Battersea, with the exception of most of the metal work. This was turned out at the Coventry works.

The total area of supporting surface is, roughly, 350 square feet, this lifting its total load of about 2,000 lbs. all on, at its flying speed of 60 miles per hour—a loading of approximately $5\frac{1}{2}$ lbs. to the square foot. The upper and lower surfaces span 40 ft. and 20 ft. respectively, the chord in both cases diminishing from 6 ft. in

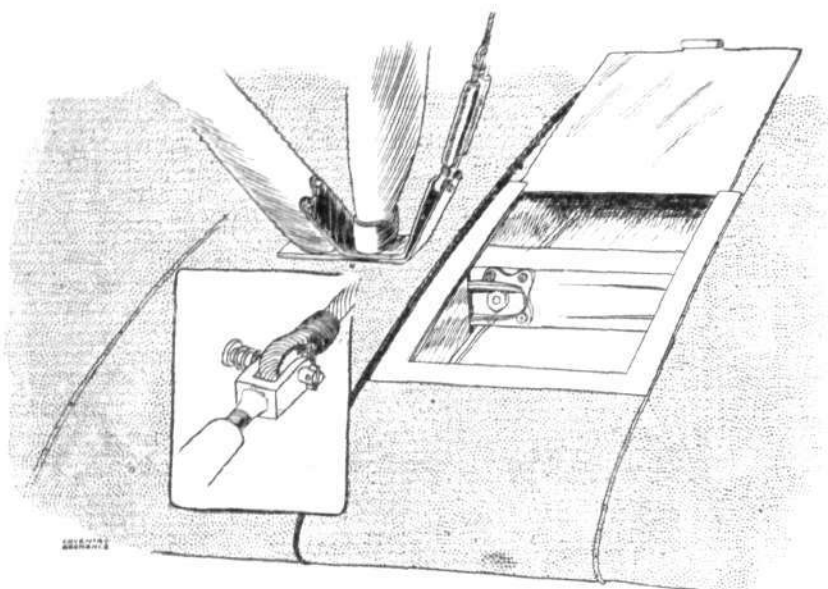
ments and jerkings that are produced in the main warping cable by the action of wind gusts on each warping surface, are communicated direct to the *opposite* wing-tip and not, as in many cases, *via* the control-wheel. This feature should also materially lessen the fatigue of the pilot when flying in anything of a strong wind. The warp-compensating wires on top pass over rocking king posts and down again under pulleys fixed just above the rear wing-spar.

For a biplane, the spars, of ash, are of very generous dimensions. They are 3 inches in depth and over an inch thick in both cases. The ribs are of spruce, and solid, except for the drilling in each to allow the internally fitted drift cables to pass. These drift cables are, by the way, of the same size solid core stranded steel cables as are used for taking the main lift.

The 8 ft. vertical struts separating the main planes are of silver



THE COVENTRY ORDNANCE BIPLANE.—Three-quarter back view.



One of the aluminium inspection doors fitted to the planes of the Coventry Ordnance biplane. The sketch shows the method employed for the joining of the wing sections. Inset is the quick release pin. These are used throughout the machine to minimise the time necessary for dismantling and erection.

spruce. Although they are of a goodly size from front to back they are relatively quite thin. But this is compensated for by the fact that they are braced together in two sets of four. They fit into steel lugs where the cross-bracing cables are also assembled.

The planes are built and attached in sections, the attachments being arranged internally where they are accessible, and where they may be systematically inspected through neat aluminium sliding doors. There are eight of these—one against each strut socket.

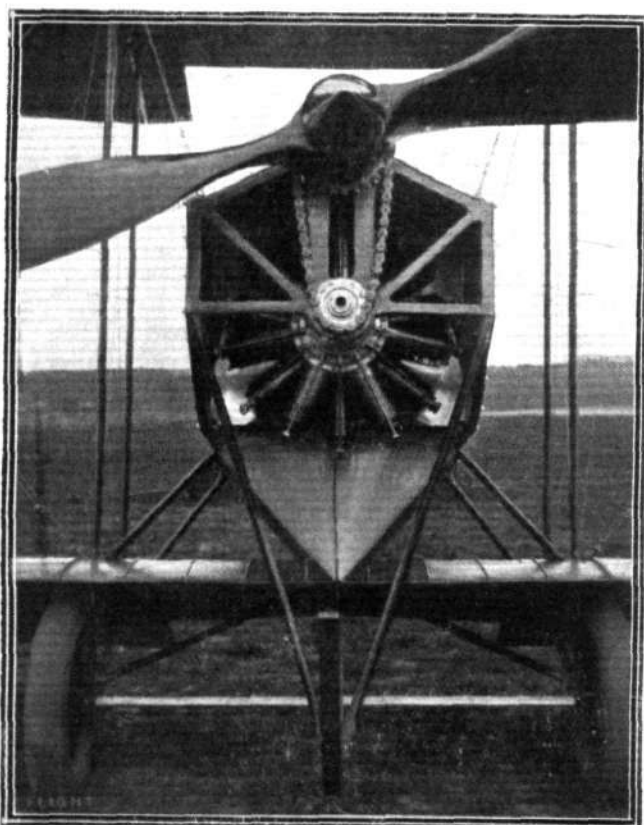
The main body—wide enough to seat pilot and passenger side by side—is essentially a wedge-shaped box girder, flattening horizontally towards the rear. In its construction ash is employed for the main booms and spruce for the cross-members. Viewed from above its sides are parallel from stem to stern. Thus it is sufficiently wide at

the tail to provide a good damping surface, a point which reduces the extra tail surface necessary. These surfaces are flat, and have a purely floating action in flight. In shape they are quarter elliptical. At the extreme rear, the sides of the fuselage extend above and below the top and bottom surfaces, forming small fins, to the back edge of which the vertical rudders are hinged. They, similarly to the elevators, are balanced in their action. A bent cane skid takes the weight of the after section of the machine when at rest on the ground. The main chassis wheels are so placed that there is only about 40 lbs. of weight at the extreme tail—a joy to its attendant mechanics—they most probably in their time have had to deal with machines tremendously tail-heavy when on the ground.

The engine mounting is decidedly interesting. The four body booms in front are assembled in a pressed steel housing, which accommodates both the motor—a 100-h.p. 14-cylinder Gnome—and the propeller shaft. The Gnome is slung low down in the housing and, keyed to its nose is a chain wheel, from which the drive is taken by a Hans-Renold chain—this alone weighs something like 25 lbs.—to the propeller shaft above. There is a reduction of 2 to 1 in the transmission. The propeller shaft is mounted, together with the engine in ball bearings, and two ball thrust washers are fitted—the larger to accommodate the propeller thrust and the smaller to take the negative thrust caused by the head resistance on the slow running or stationary propeller during a *vol plané*.

A peculiarity about the engine—we say peculiarity because we have never previously seen this system applied to a rotary motor—is that it is equipped with Bosch dual ignition, by which it may be started from the pilot's seat. Another refinement is the drip-catching funnel arranged beneath the carburettor, by which any overflow of petrol is collected and led through a copper pipe to the exterior of the body, where it is out of harm's way. A covering, similar to a Sizaire car bonnet cases in the motor and propeller-shaft housing. It is cut from sheet aluminium, and kept in place by ordinary car-hood fasteners.

The propeller is a colossal structure of teak with nine laminations. It is 11 ft. 6 ins. in diameter, and rotates at 600 revs. per minute. It is noteworthy that, from the boss to a point 18 ins. along the blade it is designed to give no thrust, but merely for that section to travel through the air, causing as little head resistance and absorbing as little power as possible. In defence of this notion the designers



Details of the front part of the machine, showing the housing for the 100-h.p. Gnome and the chain transmission.



The stream-line encased warping pulley for the Coventry Ordnance biplane.

ask two questions.—Firstly, why should the pilots sit in more draught than can be avoided? and secondly, what is the use of projecting that 3 ft. diameter column of air rearwards to impinge directly on the fuselage, where it would cause a drag equal to or in excess of the thrust obtained from projecting it?

Regarding the landing gear we must certainly say that its simplicity appeals to us a great deal more than the weird and wonderful shock-absorbing devices that we occasionally see. It consists of a pair of 30-in. wheels—6-in. tyres are employed—mounted on a common axle, which supports the machine through short struts of Honduras mahogany. No sideways movement of the machine on landing is provided for. Two wheels only are used. Three or more, if rigidly attached, would cause trouble, such as was experienced with the Astra triplane, if a landing were made on anything but the smoothest of grounds.

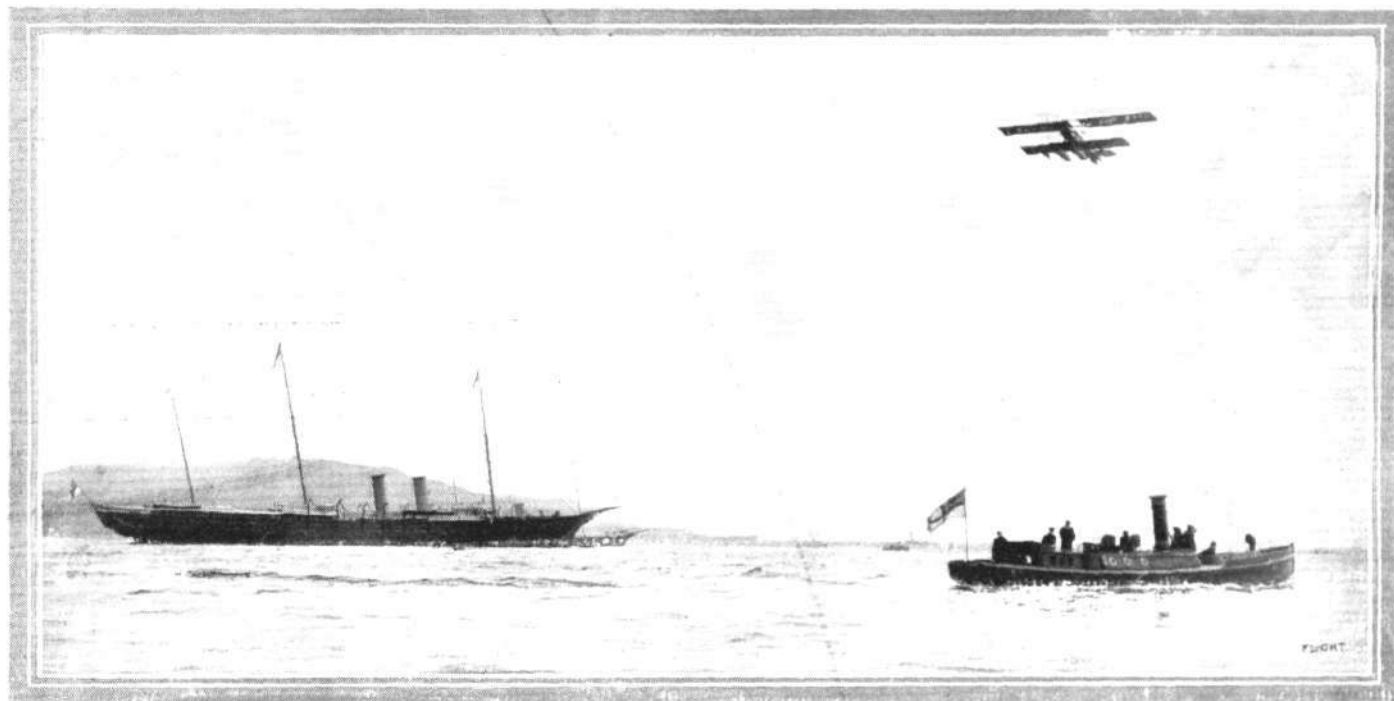
A single skid of hickory proceeds forward, supported by two struts in V of Honduras mahogany, to protect the propeller and front section of the machine.

From the cockpit the pilot and his passenger obtain a very clear view of the country directly beneath and all round them. The short span of the lower plane helped in this respect to a great extent.

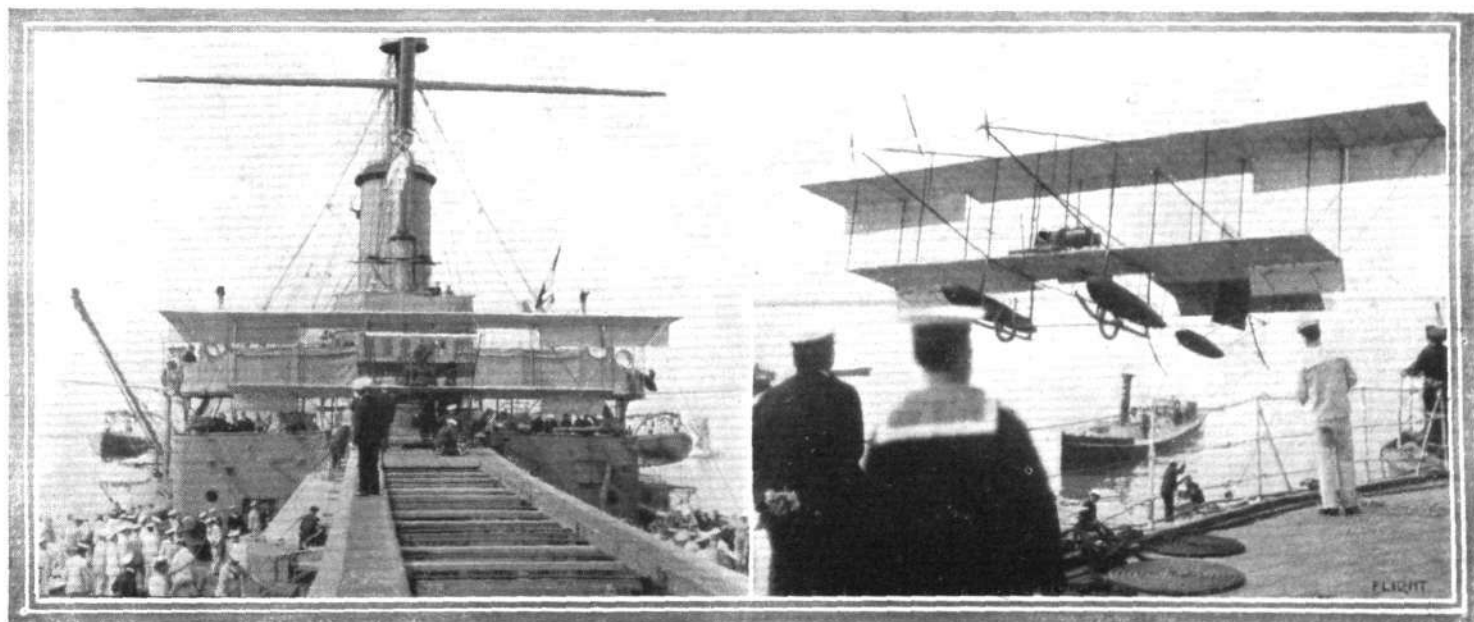
Before the pilot is a wheel, mounted at the top of a vertical column. Warping is operated by twisting the wheel laterally, and the altitude is varied by rocking the column to and fro. A foot lever commands the twin rudders; at present only single control is fitted, but this will be duplicated shortly so that the passenger as well can take charge.

In front is a dashboard where are located the engine controls and the various gauges and instruments common to present-day aeroplanes.

The oil tank, holding 22 gallons, and an auxiliary gravity feed petrol tank, holding 10 gallons, are arranged just in front of the dashboard. The main petrol tank, containing 40 gallons of fuel, is stored away in the streamline well beneath the cockpit.



Commander Samson flying on his naval hydro-aeroplane over the King's yacht at Portland last week.



Photographs by Mr. Oswald Short.

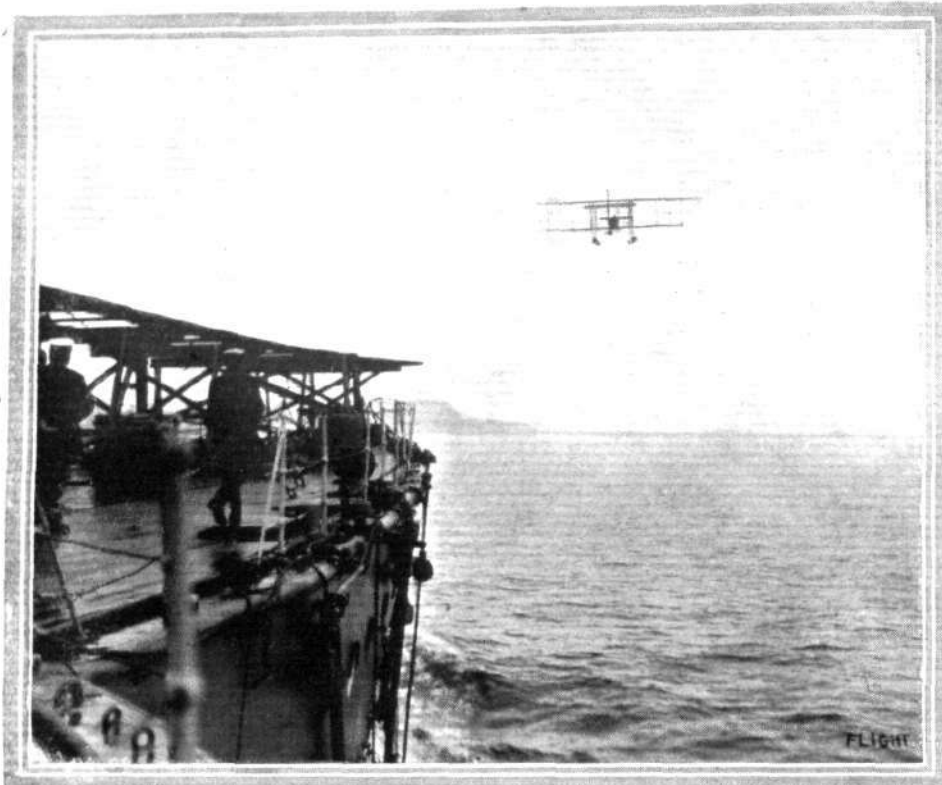
THE NAVAL HYDRO-AEROPLANES AS SEEN FROM THE "HIBERNIA."—Hoisting "S38" on to the "Hibernia," and on the left the machine in place on the special platform.

THE NAVAL REVIEW AND THE AVIATORS.

THE feats performed by the naval aviators during the King's review of his ships, must have convinced the Naval authorities, if they needed any convincing, of the practical stage attained by aviation, and also that the Navy does not lack officers who are quite competent to rank with any aviators in the world. Although the conditions were far from ideal, yet the flyers were able to carry out their arrangements, even although other portions of the programme had to be abandoned. As soon as word was received on Wednesday of last week, that the Royal yacht was within a dozen miles of Admiral Callaghan's flagship, intimation was given to Commander Samson and the other aviators, and all four at once set off to find the "Victoria and Albert," Commander Samson starting from Portland on H.M.S. "Amphibian," and Lieut. Gregory on the Short biplane, Lieut. Longmore on the Deperdussin and Captain Gerrard on the Nieuport, followed one another in quick succession from Lodmore. All were quickly swallowed up in the fog, and the first to actually find the Royal Yacht was Commander Samson who, after circling above it, returned to his headquarters, having been in the air about an hour. Lieut. Gregory, Lieut. Longmore, and Capt. Gerrard also circled above the yacht, the first named during a flight which lasted 1 hr. 10 mins.

A further display was given in the afternoon, when Commander Samson took up a naval officer bearing a letter for the King. The waterplane came down on the sea alongside the Royal Yacht, and the messenger was taken off in a dinghy. After the machine had been resting on the sea for some time, it was restarted and carried out several manoeuvres before returning to its shed. In the meantime, Lieut. Gregory appeared at a safe distance from the Royal Yacht and discharged a dummy bomb, weighing 300 lbs. from a height of 500 ft. While manoeuvring over H.M.S. "Neptune," Lieut. Gregory detected a submarine which was submerged to its periscope, and, by way of diversion, suddenly swooped down until he was within 20 ft. of the sea, a manoeuvre which created a good deal of speculation. Lieut. Longmore and Capt. Gerrard were likewise out on their machines in the afternoon,

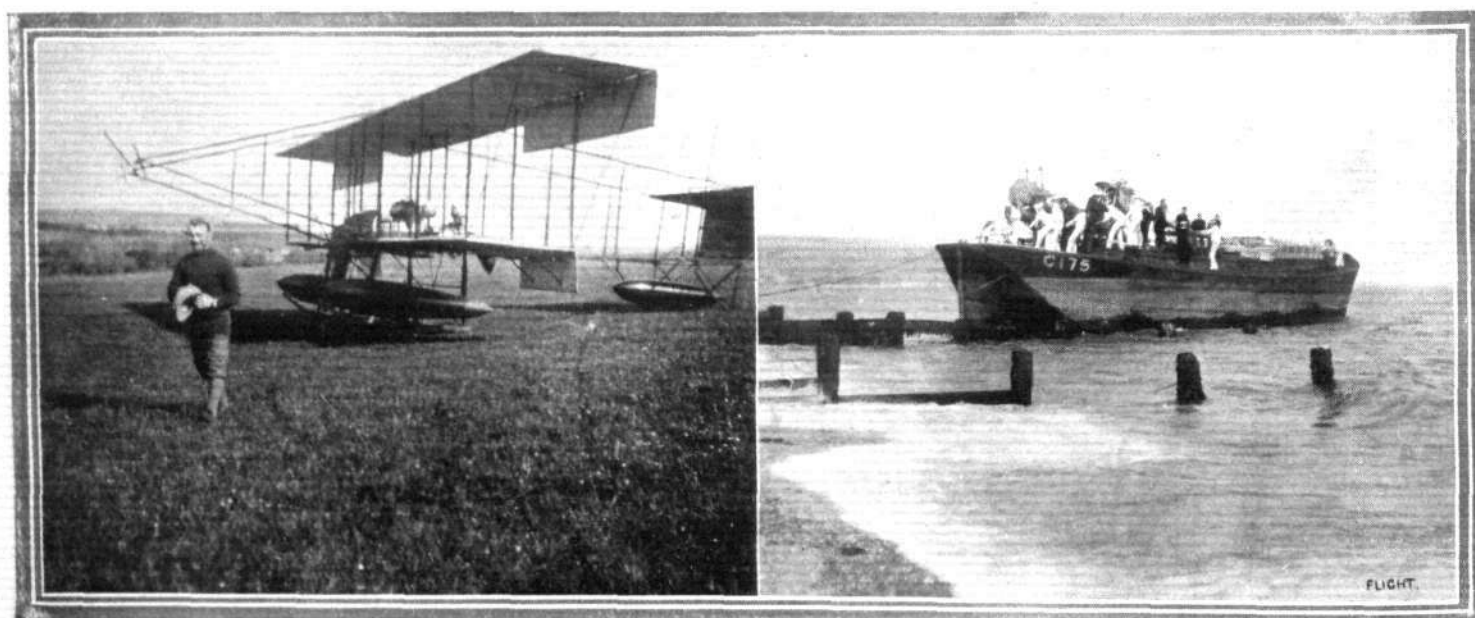
and Mr. Grahame-White on a Nieuport, and Mr. Hucks on a Blériot, both of whom had brought machines down specially, were also flying over the Bay. On the following day the fog made havoc of the arrangements, and the only flying accomplished was in the evening, when Commander Samson on the Short biplane, which had been piloted by Lieut. Gregory, took off from the special



Photograph by Mr. Oswald Short.

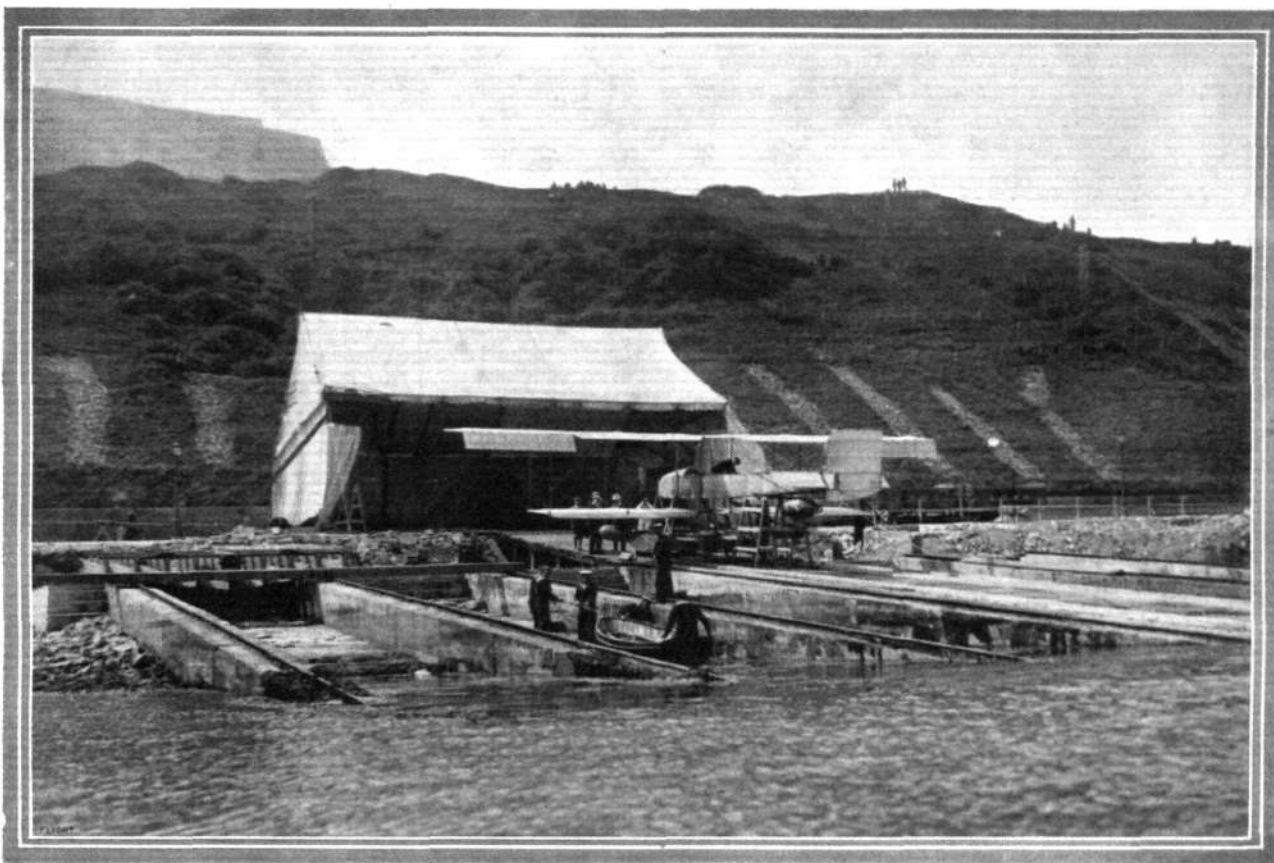
Commander Samson, on "S38," in flight for Lodmore after launching from the deck of the "Hibernia," when travelling at 15 knots an hour. Weymouth is seen in the distance.

launching platform erected on H.M.S. "Hibernia." The machine rose easily, and flew round the bay before landing at Lodmore. On Friday the operations were concluded by Commander Samson making a trip round the fleet on a waterplane, while Lieut. Gregory

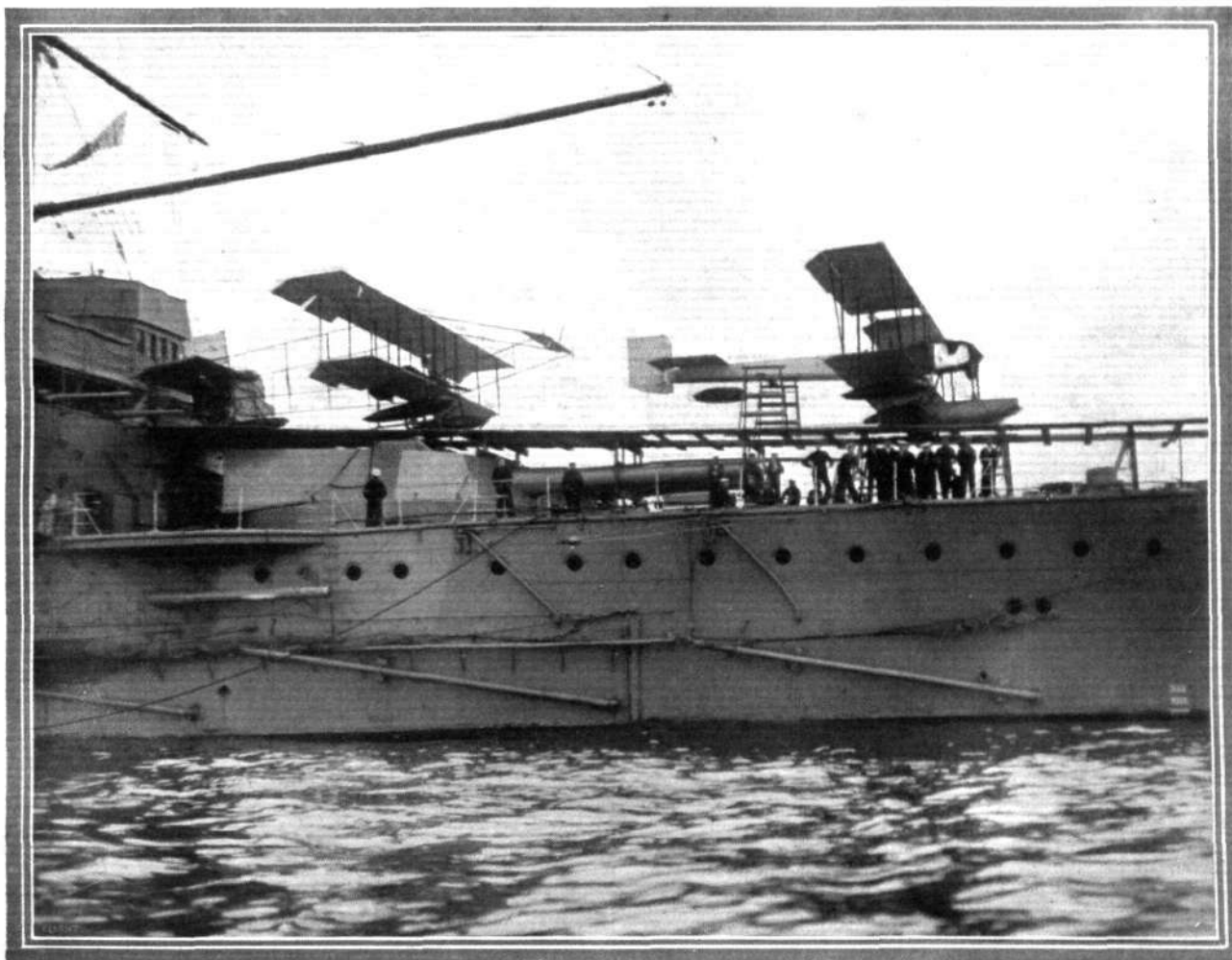


Photograph by Mr. Oswald Short.

THE NAVY HYDRO-AEROPLANES.—Landing the Short monoplane and the Deperdussin machine in a lighter from the "Hibernia" at Lodmore. On the right Commander Samson after a flight on "S38" on Lodmore ground.



The land station of the Naval Air Fleet at Portland during the manoeuvres of the Fleet last week.



THE NAVY HYDRO-AEROPLANES.—A side view of the "Hibernia" showing the two hydro-aeroplanes on the launching platform especially constructed for this purpose.

flew the other Short biplane. On returning to Lodmore this machine was run down to the beach and placed on a raft, which was towed to the "Hibernia."

Lieut. Longmore, on the other hand, forthwith set out to fly the Deperdussin back to Brooklands, while Capt. Gerrard's Nieu-

port had its wings taken off and packed up to be returned to Eastchurch.

Commander Samson had the honour of being included among the naval officers who dined with the King on the Royal Yacht in the evening.



THE MILITARY AEROPLANE.

It is quite evident that opinions still differ as to the precise types of machine that are likely to most satisfactorily fulfil the requirements of a military aeroplane. Wednesday last week the Aeronautical Society again did good work in bringing this subject once more up for discussion, and the paper that Brigadier-General Henderson read before the members was, as all present will admit, a lucidly expressed and well arranged argument in support of his view. It aroused, at any rate, the most animated discussion that has yet taken place under the Society's aegis, and as this is the primary purpose for which such meetings are arranged, this one in particular may be said to have exceeded all others in the degree of its success.

"We do want to be the foremost nation in the air," said Col. Seely, Under-Secretary of State for War, but it was very evident that the unanimity of support accorded to this fundamental desire was by no means forthcoming for any one particular type of aeroplane that might be suggested as a means of attaining it. Gen. Henderson very decidedly believes in the necessity of providing two types at least for military work, one machine to do the fighting, while the other is essentially a scout. Many of the audience, however, failed to see the necessity for the scouting type pure and simple, arguing that any war aeroplane must expect to fight and that any shelving of this aspect of the case is tantamount to begging the question.

Well expressed, as they were on that occasion, both arguments seem thoroughly logical; it is, in fact, a case for much quiet thought before one can properly make up one's mind as to which view to support. According to Gen. Henderson the necessity for the scouting type all turns on the question of passing on information obtained by reconnaissance. When asked by Mr. Mervyn O'Gorman to put a scale of relative values against his requirements of a military air scout, Gen. Henderson said that he considered the quality of passing on information to be worth 100 points and the rest very little, when it really came down to the rock bottom argument. As Gen. Henderson said, it is quite useless for a scout to be able to get information unless he is able to bring it back, and that in military operations even a little information of an incomplete kind is something, whereas the much more elaborate knowledge obtained by some scout who fails to return with it to headquarters is of no consequence whatever. In a word, it is a good scout who knows when to go home; the man who once gets beyond the point from which he can return is a failure in spite of his daring and his cleverness in penetrating to the very heart of the problem he sets out to solve.

Now this is an aspect of the case that it is well to take thoroughly to heart. It resolves itself into a fundamental simplicity that there is no gainsaying. In war, the man and the machine that can go hurriedly aloft, can fly swiftly and far until he sees something of the enemy, and then turn about and fly home again before anyone can catch him, is an assistance of inestimable value which no general would be without. It is the essence of scouting, because it provides the brain of the army with information. Of course it would be still more valuable if the scout were to fly over the enemy's lines, and bring back a detailed account of their operations, but the enemy likewise will have aeroplanes, and no such detail reconnaissance will be possible except at the risk of a fight in the air. The result of such a fight may or may not prove victorious to the reconnaissance force; if they are wholly defeated the general remains without his information.

That is why Gen. Henderson and those who believe in two types at least, make such a point of the necessity for recognising the essential purpose and dependent qualities of the scouting machine.

Although distinct in its purpose from the fighting aeroplane, nevertheless it is necessarily made of the same kind of component parts. Thus, whatever engine is possible for one type must be possible for the other type also. This, in itself, constitutes one of the determining factors, because if we take any given engine that is thoroughly reliable and satisfactory for military purposes and use it for propelling a fighting aeroplane and also on one that is designed solely for scouting purposes there will certainly be a difference in speed in favour of the latter machine of such an amount as would place comparison under this head altogether out of court. Speed is obviously the most important attribute of a scouting aeroplane, because on its speed alone must it rely for getting safely back to camp without being overtaken by the enemy. In effect, therefore,

one may say that, theoretically, everything should be sacrificed to the quality of speed in the design of a scouting machine.

In practice, there are some considerations that tend to modify this point of view; thus, for example, it is essential that the pilot should be able to land without breaking his neck if he is to be in a position to communicate what he has seen with the fullness of detail that is naturally to be desired. Landing with very high speed machines is a problem possessed of its own difficulties, for which reason Gen. Henderson entered a strong plea for the variable speed machine, which was equally strongly supported by Col. Seely when he spoke later in the evening. Other considerations that Gen. Henderson advanced as attributes proper to the scouting aeroplane were silence and invisibility, the reasons being that from these two qualities a scout might minimise the likelihood of being seen, and thus increase his chances, not only of gaining more information, but of getting away from the danger zone with what little he has without exciting the enemy's suspicion or giving them warning that they have been observed.

Perhaps the most important question affecting the scouting aeroplane was that raised by Mr. Ledeboer, who suggested that the introduction of wireless telegraphy would altogether alter the outlook from every point of view, and in particular, would remove the necessity for the actual return of the scout, which had been laid down to be a fundamental requirement of scouting practice. With wireless telegraphy, as Mr. Ledeboer said, it would be possible for those on board the aeroplane to communicate their information while still over the enemy's lines, and they would thus be in a position to fulfil their purpose as scouts while at the same time risking everything to obtain the fullest possible information.

It is a strong argument, but the question is, does the hypothesis precisely represent the case? It may be taken as certain that any properly equipped installation of wireless telegraphy would bring the machine so fitted into the category of the fighting aeroplane, in so far as its carrying capacity would have to be greater and its effective speed less for a given engine power than in the case of a one-man aeroplane designed first and last for scouting purposes. The point at issue, therefore, seems to be, could the scout pure and simple frustrate the purpose of the wireless machine? Could a well organised corp of scouts so patrol the air as to give adequate warning of the approach of one of the enemy's larger machines before that craft could get near enough to transmit any useful information? Such warning would of course be the signal for the despatch of a fleet of fighting aeroplanes, which would attempt to drive off the hostile craft at some point well outside the home lines. If such were the case there would still be reason for the scout pure and simple, but we admit that the argument for wireless telegraphy is undeniably strong, although the fact remains that for the moment no one is very well acquainted with the exact measure of its utility in the field in this connection.

Indeed, the whole subject is on the *tapis*, not so much for the purpose of affording an opportunity of speculating as to the future, as for the purpose of helping those who have the matter in hand to crystallise their views as to what is best to be done in the first instance. The development of aeroplanes for military purposes must ever have for its background the nature and requirements of real war. The game of war, however, is not a set piece and to this extent the precise purpose and mode of employment of the flying machine becomes a speculative question. In order to conduct their development intelligently it is essential that those in authority should attempt to work along a definite line, and it is of inestimable value to all concerned that there should be a free and clear expression of individual views, such as was the case at the last meeting of the Aeronautical Society.



Vedrine Leaves the Hospital.

It is good news to hear that Vedrine is recovering from his accident in a marvellous manner, and was able to leave the Lari boisiere hospital, on Sunday. He is staying at a private nursing home, where he is busy making plans for the future. He still has ideas of making a flight from Douai to Madrid, and is also again to make a bid for parliamentary honours, having been accepted as candidate for a vacancy at Marseilles. In the meantime he is seeking to have the election of his recent opponent, M. Bonnail, annulled.

HENDON SECOND MAY MEETING.

ONCE again the weather turned out to be anything but pleasant for flying last Saturday on the occasion of the second May meeting at Hendon. During the early part of the afternoon the wind hardly ever fell below 20 m.p.h., and at times reached 40. In spite of this, however, some really very fine flying was witnessed by a fairly large assembly of the public, and but for two mishaps, which were fortunately without serious results, the meeting was most successful.

At 3.30 p.m.—the time announced on the programme for the commencement of the contest—the Grahame-White Blériot monoplane No. 6, and the Howard Wright biplane No. 10, were brought out, the latter being "taxied" by Mr. Lewis Turner with several mechanics holding it down. In order to start the machines facing the wind, which was blowing from the south, they were taken across the ground to pylon No. 3. Lewis Turner made the first flight, and although he only flew straight across to the starting line, it was a wonderful piece of airmanship. Even Mr. Hucks, who started immediately after on the Blériot, did not seem to have it all his own way. He flew straight out towards the Edgware Road, making slow progress against the wind, but when he turned back to the aerodrome his speed had got into the neighbourhood of 80 miles per hour. On reaching the aerodrome he made one complete circuit and after a spiral *vol plané* made an excellent landing. He was in the air for about eight minutes and received a well-earned round of applause. At about 4.15 p.m. Turner made another short flight during which he raced a train, coming out an easy winner. Meanwhile the Caudron biplane was brought to the starting line preparatory for the cross-country handicap to Elstree and back. There were three entries for this race, Turner on the Howard Wright biplane, Ewen on the Caudron biplane, and Hucks (scratch) on the Blériot monoplane. Turner was first off at 4.35, but when just outside the aerodrome he was blown down amongst the trees and disappeared from view to the alarm of the spectators. It was speedily ascertained, however, that the pilot was not hurt, but the machine was a bit damaged. Hucks started shortly after Turner as Ewen decided not to start, and finished the course in 13 mins. 44½ secs. without accident. Shortly after 5 o'clock Hamel went up in the Grahame-White Blériot; he got off with the wind and gave about 30 mins. very fine flying, high up above the sheds. He would fly out towards the Edgware Road and then come back to the aerodrome in a series of small circles with impressive banks. In the meantime Grahame-White was giving an exhibition flight on the Nieuport monoplane, and some expectation was aroused by the announcement from the Judge's box that Mr. Valentine and Mr. Moorhouse had started from Brooklands and would take part in the speed handicap on their arrival. It was not until 6.25 p.m., however, that Valentine arrived on the Bristol monoplane having covered the distance of 20 miles in 18 mins. Mr. Moorhouse did not start. Just before the start of the speed handicap, Mr. Crawshaw got away on his Blériot monoplane for a cross-

country flight, employing an automatic slip-starter. The speed contest was to be held in two heats and a final of three laps each, Hamel (Blériot) and Ewen (Caudron biplane) being in the first, and Hucks (Blériot) and Valentine (Bristol) in the second. In the first heat Ewen kept ahead of Hamel until the last lap, when the latter passed him at the last pylon, and crossed the winning post nine seconds ahead of Ewen. After Hamel passed the Caudron he closed in a little so that the draught from his propeller almost blew Ewen over, but the latter managed to keep well in hand. The second heat was a walk over for Valentine, as Hucks "fouled" Pylon No. 5 on the first lap and failed to return and pass the pylon properly. In the final, Ewen—it had been decided to allow him to fly in this heat—started off first, and Hamel followed shortly after. He had no sooner got moving, however, than the machine swerved, either owing to one of the wheels buckling or catching in a rut, and finally crashed into the Nieuport, which was standing close to the first pylon. The Blériot had its propeller smashed and other trouble, whilst the Nieuport was very badly damaged. To add a little extra excitement to things, Mr. Crawshaw returned from his cross-country flight and had some difficulty in avoiding the crowd which had rushed on the ground to see what had happened. Mr. Ewen, who was doing his second lap, was signalled to come down, and the race was then declared off.

Shortly after eight o'clock, Mr. Turner regained the aerodrome in the damaged biplane after an exciting ascent from the field in which he was blown down. As his experience was somewhat unique, it might prove interesting to recount his adventures.

Commencing his flight at the starting line, he got well away in a side wind, and, passing over the trees at the end of the aerodrome, was fully 50 feet above their tops. Over the trees at that end of the aerodrome he encountered a series of wind gusts of a most malignant type, which brought him down right below the level of the tree tops. The only thing open to him was to steer for a gap between two trees, which, by the way, was only just wide enough for the machine to pass, and land in the field—a particularly small one as it happened—on the other side. In landing, when about twenty feet off *terra firma*, a gust, seemingly from above, knocked him hard and flat on to the ground. Naturally sundry wood was broken, and the propeller suffered depreciation to the extent of quite a big lump out of one tip, and a split blade. Mechanics were quickly on the spot, but repairs were not completed until the daylight had almost gone. As they could see no convenient method, other than flying it, of getting it out of the field, Turner was prevailed on to do the necessary piloting, and it was by no means an easy undertaking, for the get-off was thick grass, and the gap between the trees only gave some three feet of clearance on each side. Besides, the main wing booms had only been temporarily put in splints, and the broken propeller had not been changed. However, he got back safely enough, hopping over the tree tops like a wounded bird.

THE "DAILY MAIL" AEROPLANE SCHEME.

ONCE more, with their characteristic enthusiasm in matters aviatric, the *Daily Mail* have come forward with a new idea to bring home to the public the enormous importance of the aeroplane. It is not a big cash prize that has been offered this time for the one to first succeed in fulfilling certain conditions—what they are going to do, virtually, is to send one or more aeroplanes in charge of experienced pilots round the whole of Britain. Thus not merely a small percentage, but nearly the whole population of England and Wales will be able to see and judge the value of the aeroplane as it stands at the present day. M. Henri Salmét, the well-known Blériot pilot, who earned not long since great distinction for his truly marvellous flight to Paris and back again, has already been engaged by that journal to complete a thirteen weeks' tour of the provinces, visiting every city, town, village and hamlet possible in that space of time.

The programme fixed upon was that he should start on Thursday last and make his way, following the Thames, to Reading. Here he will remain for the night, and continue on the following day,

Nardini Lands in England.

AFTER some delay, due to the bad weather, Nardini flew across the Channel on Sunday last and landed at Deal, afterwards going on to Dover. It will be remembered that the French Government issued an expulsion order against Nardini, under the terms of which he was to have left France on the 9th inst. He started from Villacoublay on a Deperdussin monoplane, on that day and made a first stop at Brasches in the Somme district. After starting again he apparently lost his way, and eventually came down in a big field on the Belgium border, close by Furnes. A long wait was

Friday, to Bath. Bristol, to which town he intends to proceed on Saturday, he will establish as a headquarters. From this point he will make daily excursions into the surrounding districts. The further programme has not yet definitely been decided upon as regards the exact time-table, but it has been announced that immediately after the stay at Bristol, Wells, Taunton, Exeter, Torquay and Plymouth will be visited. Up to the present only one pilot, M. Salmét, has been engaged by the *Daily Mail* to carry out this valuable missionary work, but we understand that negotiations are being made for the booking of other well-known pilots to assist in the demonstrations.

Not only are the *Daily Mail* bent on popularising the land aeroplane, they are also going to pay their attention to the water aeroplane by arranging for demonstrations to take place on hydro-aeroplanes at points round our coast, as was suggested in FLIGHT. In this connection negotiations are also on foot, and in all probability before a month has passed we may have the pleasure of seeing not one but many machines of this type at work round our coastline.

necessary in order to make some adjustments, but later he flew over to Dunkerque, where he had decided to stop the night. The next day he flew on to the Beaumarais Ground near Calais, but was hung up there for two days. He started at 5 o'clock on Sunday morning, intending to make for Dover, but his compass went wrong and he arrived at Deal. After taking breakfast he followed the coast to Dover, where he landed safely at the aerodrome. On Monday he was flying over our Naval harbour and out to sea for a good distance, the trials being watched by a large crowd of people.

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

Committee Meeting.

A MEETING of the Committee was held on Tuesday, the 14th inst., when there were present:—Sir Charles D. Rose, Bart., M.P., in the Chair, Mr. Griffith Brewer, Mr. G. B. Cockburn, Mr. John Dunville, Col. H. C. L. Holden, C.B., F.R.S., Prof. A. K. Huntington, Mr. F. K. McClean, Mr. J. T. C. Moore-Brabazon, Mr. Alec Ogilvie, Mr. Mervyn O'Gorman, Mr. C. F. Pollock, the Marquess of Tullibardine, M.V.O., D.S.O., M.P., Mr. R. W. Wallace, K.C., and the Secretary.

Late Mr. E. V. B. Fisher.—Before proceeding with the formal Committee business, the Chairman referred to the sad accident which befell Mr. E. V. B. Fisher and his passenger on the 13th inst., and it was unanimously resolved that a message of sympathy be sent to relatives of Mr. Fisher upon the heavy bereavement they had sustained.

New Members.—The following new members were elected:—Lieut. Ivon T. Courtney, R.M.L.I., Oscar T. Gnosselius, Roland H. Haxell, Bernard Isaac, Lieut. Gordon Strachey Shephard, Robert Bertram Slack, and Charles Alston Tyrer.

Aviators' Certificates.—The following Aviators' Certificates were granted:—

- 214. Lieut. Alan Hartree, R.F.A., (Bristol Biplane, Salisbury)
- 215. Lieut. Gordon Strachey Shephard, (Bristol Biplane, Brooklands)
- 216. Lieut. Donald Swain Lewis, R.E., (Bristol Biplane, Brooklands)
- 217. Capt. Godfrey Paine, R.N., (Short Biplane, Eastchurch).

Special General Meeting.

A special general meeting of the members of the Royal Aero Club was held on Tuesday, the 14th inst., at 4.30 p.m., the Chair being occupied by Colonel H. C. L. Holden, C.B., F.R.S. On the motion of Mr. John Dunville, seconded by Mr. C. F. Pollock, Mr. Roger W. Wallace, K.C., was unanimously elected a vice-president of the club.

Public Safety and Accidents Investigation Committee.

A meeting of this Committee will be held on Tuesday next, the 21st inst., at 5 o'clock, when the reports of the witnesses of the recent fatal accident at Brooklands will be considered. In addition to these reports, several eye-witnesses of the accident have been invited to attend and give evidence. The Club Official at Brooklands, Mr. W. O. Manning, was at Brooklands at the time of the accident, and immediately took steps to collect evidence bearing on the accident.

It has been decided to appoint club officials at the various centres to enquire into and report on all accidents, and the Committee will be glad to receive offers of assistance from experts and those with technical knowledge, who need not necessarily be members of the Club.

Competitions Committee.

A meeting of the Competitions Committee was held on Tuesday, the 14th inst., at 8 o'clock, at the Royal Automobile Club (by kind

permission). Mr. T. O. M. Sopwith and Mr. R. L. Charteris, representing the Brooklands Aero Club, attended the Committee and gave their views as to passing in aeroplane races confined to flying grounds. The Committee will hold a further meeting on Tuesday next, the 21st inst., to draw up finally the regulations governing races confined to flying grounds.

Hurlingham Balloon Ascents.

The following events have been fixed for Hurlingham for this season:—

- Wednesday, June 12th ... Point-to-Point Race for a Cup offered by Mr. John Dunville.
- Saturday, June 22nd ... Long Distance Race for the Hedges Butler Challenge Cup.
- Saturday, July 13th ... Point-to-Point Race for a Cup presented by a Member.

Members of the Royal Aero Club are admitted free to Hurlingham on these dates on presentation of their membership cards.

Ascents in the Club Balloon.

The Club Balloon will make private ascents from Hurlingham on Saturday, June 1st, and Saturday, June 8th. Members wishing to make an ascent are requested to send in their names to the Secretary together with a remittance for £4 4s. Seats in the Balloon will be allotted according to priority of application.

Swiss Hydro-Aeroplane Meeting.

The Aero Club of Switzerland has advised the Royal Aero Club that it will organise an international hydro-aeroplane competition at Ouchy-Lausanne during the first fortnight in September.

Manufacturers of hydro-aeroplanes in Great Britain wishing to take part in the competition are requested to communicate with the secretary of the Royal Aero Club.

F. A. I. Conference in Brussels.

A Special Conference of the International Committee formed by the Fédération Aéronautique Internationale is being held in Brussels on the 17th and 18th inst., to deal with the question of the Law of the Air. Mr. Roger W. Wallace, K.C., Vice-President of the Royal Aero Club, is presiding, and Mr. Griffith Brewer is attending as the other delegate from the Club.

British Manufacturers' Sub-Committee.

An informal meeting will be held at the Royal Aero Club on Wednesday next, the 22nd inst., at 5.30 p.m., to consider the question of forming a Committee of British Manufacturers connected with the Aviation Industry. The Chairman of the Club, Sir Charles D. Rose, Bart., M.P., will preside, and manufacturers identified with the Aviation Industry are cordially invited to attend.

Next Committee Meeting.

Owing to the Whitsuntide Holidays, the next meeting of the Committee will be held on Tuesday, June 4th.

166, Piccadilly.

HAROLD E. PERRIN, Secretary.

Damage to Crops, &c.

IN the House of Commons on Monday, the President of the Board of Agriculture was asked by Mr. C. Bathurst, whether in view of the damage to market garden and other crops caused by the descent upon them of aeroplanes and other aircraft, and of the crowds which, especially in the environs of London, collected round such machines, the Government would take steps to secure to the owners of such crops compensation for the loss occasioned. Mr. Runciman replied that he did not think the necessity had yet arisen for the intervention of the Government.

Lieut. Parke Delivers Avro Biplane at Farnborough.

ON the 9th inst., Lieut. Parke, R.N., successfully delivered at Farnborough the first of the Avro biplanes built to the order of the British War Office. The journey from Brooklands to the Headquarters of the Royal Flying Corps was practically without incident.

A Territorial Flying School at Shoreham.

WITH the object of establishing a flying school for the training of territorials and naval reservists, a sum of £300 has been subscribed by several members of the Shoreham Aero Club. It is proposed to pay special attention to hydro-aeroplanes and to organise a local flying corps.

Commander Samson Flies from Dover to Westgate.

ON Sunday afternoon, Commander Samson started on his waterplane from the battleship "Hibernia" in the neighbourhood of Dover with the intention of flying to Eastchurch. Owing to carburettor troubles, however, he was brought down at Westgate, and was towed by the torpedo destroyer "Recruit" into Sheerness Harbour. Commander Samson still retained his seat in his machine and was, in fact, joined by another officer.

Weymouth to London in an Hour and Three-Quarters.

AFTER giving an exhibition flight at Weymouth on Thursday week, Mr. B. C. Hucks mounted his Blériot monoplane at 3.20 and set off for Hendon, the aerodrome being reached practically without incident at five minutes past five, the trip of 148 miles being made in an hour and three-quarters.

Another British Naval Pilot.

ONE of the latest to qualify for a Royal Aero Club certificate at the Eastchurch Flying Ground is Capt. Godfrey Paine, R.N., who after only four days' tuition made the necessary tests on a Short biplane. Capt. Paine attached to H.M.S. "Actaeon" at Sheerness.

THE BROOKLANDS CALAMITY.

ONCE again it is our sorrowful duty to record the passing of one of the most popular and one of the hardest working pilots in the British industry—Mr. E. V. B. Fisher, who, late on Monday afternoon last, was killed at the Brooklands aerodrome. The event is doubly painful, for the passenger that he was carrying at the time, Mr. Victor Mason, an American gentleman, shared the same fate. Quite a lot of flying had taken place at the aerodrome during the afternoon, for from 3 o'clock onwards the weather had been almost ideal. Sabelli had been flying on the Deperdussin, Hotchkiss on the Bristol, Lieut. Parke and Wheeler on the Avro biplane, Sopwith and Moorhouse on their Blériots. Poor Fisher, too, had been in the air previously, both *solos* and with Mr. Dukinfield Jones as passenger. Mr. W. O. Manning had also been practising on the ill-fated monoplane. Mr. Victor Mason was Fisher's second passenger that afternoon. He had come down to the aerodrome in company with Commander Samson and Lieut. Porte to witness the flying, for he was keenly interested in the sport. Already he had flown as passenger with Mr. Lewis Turner in a biplane at Hendon, and he had wished similarly to experience a trip on a monoplane. Fisher himself had suffered a cycling accident some time previously and hurt his left arm to such an extent that he did not attempt to fly for over a week after the accident. At the time of his accident he was flying with his elbow strapped loosely to his waist, so that he could not strain it by lifting it too high. But he said that, although his left arm was limited in its free movement, it did not greatly inconvenience him in piloting. He had made two circuits with Mr. Mason when, after turning above the paddock on his return to the sheds, he was seen to bank rather heavily to the left, to side-slip, and then to dive nose downwards to the ground. A short delay, and flames burst upwards from the wreckage, the petrol tank having been burst open by the force of the impact, the aeroplane, which was completely wrecked, being utterly consumed. Sopwith on his Blériot was the first to arrive at the scene of the accident. He had just rounded the sheds when the accident occurred, and without delay he restarted and was able to fly over to the wreck. The unfortunate pilot had been thrown clear of the machine, fully 30 to 40 ft. away, but Mr. Mason had remained in the machine. Both must have been instantly killed.

E. V. B. Fisher.—A Retrospect.

On Monday, May 13th, Brooklands lost one of its first and most popular workers. Fisher was first actively associated with aviation in the early part of 1909 when a short hop in an aeroplane was something to be marvelled at. Even in these early days he showed an aptitude and a knowledge of matters aeronautic, which was then considerably in advance of the times, when at Lea Marshes he assisted in the construction of what was the first All-British machine to fly.

During the remaining part of 1909 he was closely connected with the further experiments of Mr. A. V. Roe and with him attended the meeting at Blackpool, where the first serious flying in this country was to be seen.

To the first shed to be erected at Brooklands Fisher came in January, 1910, and with Howard Flanders worked at the construction, and carried out the trials of a small and original monoplane locally known as "The Pup." From then until he took his certificate on May 2nd, 1911, he was engaged in constructional work which has since proved to be of great value.

He took his *brevet* at the Hanriot School at Brooklands, with whom he remained for the following six months as instructor, and passed many pupils who now rank among our best known pilots. In October of the same year he met with a serious mishap while making the first passenger trials with the Vickers monoplane. Shortly after his complete recovery from this accident he renewed his connection with his friend Howard Flanders by becoming pilot and instructor to the firm bearing that name.

But not only was Fisher a pilot of the very first order. His thorough knowledge of the theory and of the practical aspect of construction, his surprisingly wide range of useful and exact knowledge together with his unflinching willingness to place such knowledge at the disposal of anyone in difficulties rendered him one of the most invaluable members of the Brooklands community.

To Fisher Brooklands owes in a large measure its success as a centre of aviation. As secretary of the original Shed Holders' Committee and more recently as organiser of the Brooklands Aero Club we all owe much to his untiring energy. Add to this his cheery good nature and keen sense of humour and it will be readily understood how Brooklands mourns its best friend and British Aviation one of its finest workers.

Mr. Victor Mason.

Everyone will doubly deplore the calamity which also cost Mr. Mason his life. A very human tribute has been given by

Mr. Richard Northcott a friend of the deceased, which appeared in the *Daily Telegraph* as follows:—

"On Sunday Mr. Mason told me that he was looking forward to 'a ride in the air' at Brooklands the following day, adding 'it will be my last, because I have so much to clear up.' He was then referring to the completion of the great financial scheme which had occupied him in Europe for many months. He had secured in London and Paris guarantees of capital to the amount of nearly three millions for the construction of a railway in Carolina, and this week the final details were to have been settled. On Sunday he was very happy over his success, and particularly as it meant his early return to his wife and children. Mr. Mason originally met me through a letter of introduction which he presented from Mr. H. J. Ketcham, the American representative of the Great Eastern Railway.

"He was fond of telling his early political experiences as private secretary to various Ministers under Mr. Roosevelt, and not the least interesting story he told was that associated with a spacious room he occupied in one of the official buildings in Washington. Here he discovered a safe that had not been opened for years. He had it opened, and in it he found the woman's apparel in which one of the generals tried to escape through the lines during the war, and also the spur which he had neglected to remove from his left boot, and which gave him away when he was nearly out of reach of his enemies. I forget the name of the general, but the story will be familiar to Americans.

"Poor Mason had previously been in an aeroplane at Hendon, and was quite fascinated with the easy motion.

"I see he has been described as a millionaire. I know he would have objected to this designation. He was well-to-do, and lived at the Carlton, but that does not make him a millionaire. He was a typical fine American, a gentleman who never bragged, a man who was ideal company."

THE ACCIDENT.

So far as we are able to ascertain, the cause of this terrible fatality was a side-slip in the air brought about by an attempt to turn sharply while the machine was perhaps slightly *cabré*. That is to say it is suggested that Mr. Fisher sought to turn while the tail of his machine was slightly lower than the head. The turning manoeuvre is a source of increased resistance to flight and as such would still further tend to adversely effect the attitude of the machine, but apparently the critical point was over-reached and the machine seemed to have slipped away downwards and sideways, the beginning of a head-first fall. Once before, we understand, has this happened to Mr. Fisher who was, however, on that occasion able to recover by steering the machine into line with its accidentally oblique direction of motion. On the fatal occasion, however, he lost control, and may in fact have been pitched against the control lever, thus exaggerating the diving attitude of his machine at the moment when it most needed to be diminished. From the fact that Mr. Fisher was thrown out of the machine while still some 70 feet in the air, it would seem probable that the tail must have swung up vertically into the air and jerked him out of his seat. Nothing, however, could well have saved them at this point, for the machine was virtually making a sheer drop from a height of perhaps 150 feet and the velocity must have been terrific.

It is, of course, a case that will naturally come before the R.Ae.C. Accidents Committee for investigation, and pending their inquiry, which is sure to elicit any helpful information that may be forthcoming from this sad affair, we must be content to draw the veil, and meantime offer an expression of our deepest sympathy to the relatives and friends of those whose lives have been lost but whose names henceforth will be numbered on such an honoured roll.



Fatalities in Germany and Italy.

On the 12th inst. a fatal accident occurred at Cassel, Schmigalski an aviator from Berlin, falling from a height of 100 metres through the capsizing of his machine in attempting a high flight. His injuries were so serious that he died in a few minutes. On the previous Friday an Italian officer at the Military Aviation School at Pordenone met with his death in an accident caused by a too sudden landing.

Flying in Morocco.

ACCORDING to a telegram from Casablanca, three French officers on the 10th inst. flew from that place to Rabat. Capt. Clavenad also started, but was brought down by engine trouble at Wadi Kem. The officers propose to continue their journey to Fez.

FROM THE BRITISH FLYING GROUNDS.

Brooklands Aerodrome.

ON Tuesday last week Pizey was out early on the Bristol-Anzani monoplane for two circuits, but the machine was not lifting up to usual form, owing to engine being out of tune. Raynham on the Green-engined Wright was also round for several circuits, but wind prevented any school work.

Wednesday was windy all the morning, but Raynham managed to get in a short solo, and later Sopwith took up Howard Wright.

In the evening of Thursday the weather cleared up, and a good number of machines were at work. Hotchkiss made a solo on the Bristol biplane, and then Shephard on the same machine secured the second half of his *brevet*, flying in good style at 600 ft. Nesham, also on the Bristol, made two figures of eight, and was only prevented from going for his certificate by the increasing wind. Raynham on the Wright put in an hour's tuition work with Captain Alston, who also had a flight with Sopwith on the Blériot. Fisher on the Flanders made several flights, both solo and with a passenger.

On Friday morning Pizey started early with Percival for tuition flights, while Bettington put in a good deal of rolling practice on the Bristol monoplane. Raynham was on the Wright with Capt. Alston and Snowdon Hedley, the latter making a good flight from the pilot's seat. Duigan made a good flight on his little Avro with 35-h.p. E.N.V. engine, and the Pashleys were also out on the Humber monoplane. In the evening Pizey and Hotchkiss were out with Percival and Hotchkiss, and Allen later also made some straights on the Anzani monoplane.

On Saturday morning, Fisher was flying for a considerable time on the Flanders with and without pupils. Hotchkiss was with Percival, who later did some rolling alone. He was then again taken up by Hotchkiss for landing practice. The Vickers with Macdonald piloting did several straights, showing a good turn of speed. Raynham was up for over an hour teaching Capt. Howard and Capt. Alston. Valentine made several flights on a new Gnome-Bristol monoplane for testing purposes. In the afternoon, a relay race was organised by the Brooklands Aero Club, and in spite of a bad wind, six machines were lined up for the start. The competitors were divided into the following pairs: 1, Sopwith (Blériot) and Parke (Avro biplane); 2, Pizey (Bristol biplane), Raynham (Wright biplane); 3, Kemp (Flanders), Spencer (Spencer biplane).

The rules were, the first man had to make two circuits of a marked course, then land, leave his machine, and deliver an envelope to his team mate, who had to be ready with his engine running, who flew round a similar course delivering the envelope to the judge. The time was taken from the start of the first man to the final delivery to the judge. The race proved to be exceedingly amusing and at the same time brought out some excellent flying, the result being in the order given above. The times were, Lieut. Parke and Sopwith, 7 mins. 40 secs., Pizey and Raynham 9 mins. 36 secs., and

Spencer and Kemp, 9 mins. 45 secs. The race to Chertsey had to be abandoned owing to the wind.

Sunday morning work was begun early under splendid weather conditions. Fisher on the Flanders made some good flights before handing machine over to Manning, who made some very good straights until the wind rose. The Vickers was doing straights and half turns. Blondeau was giving instruction to a pupil on his racing Farman, while Gordon Bell made several circuits on the same machine. Raynham, on the Wright, was testing, and Pizey was up a good deal with pupils. Humphries brought out his big monoplane for the first time for several months and after rolling for some time up and down the ground, was unfortunate enough to run into Blondeau's Farman, which was just about to start. The Farman being the lighter machine suffered considerably, the whole of one side being carried away.

The wind then got up and remained bad for the rest of the day the only flying in the afternoon being by Moorhouse and Raynham, both of whom found the wind very bad.

Early on Monday morning Hotchkiss gave Henderson, a new pupil, his first lesson, and Percival did some hops and rolling. Bettington was on the Anzani monoplane for ten minutes rolling. In the evening Sopwith was flying on the Blériot with passengers, and Hotchkiss was giving lessons to Henderson and Anderson. Nesham then made a solo. Further flying was stopped for the night owing to Fisher's lamentable accident.

Freshfield (The Mersey Aeroplane Co.).

PLANES, LTD., has decided to separate the aviation department from its other departments, and the former will now be carried on at Freshfield by Messrs. Fenwick and Swaby, under the title of the Mersey Aeroplane Co. The new all-British monoplane will, for the future, be known as the "Mersey" monoplane.

On Wednesday last week Fenwick took the machine over to Waterloo, to visit the Liverpool School. Oddly enough Melly had just started on his Blériot to visit Freshfield and the two met half way, and both returned to Waterloo. Melly was then taken up as passenger, and was much impressed by the speed and stability of the new machine. Later on Mr. Thompson, who is over 70 years of age was taken up for several flights. Is this a record age for a passenger? The machine remained at Waterloo for the night.

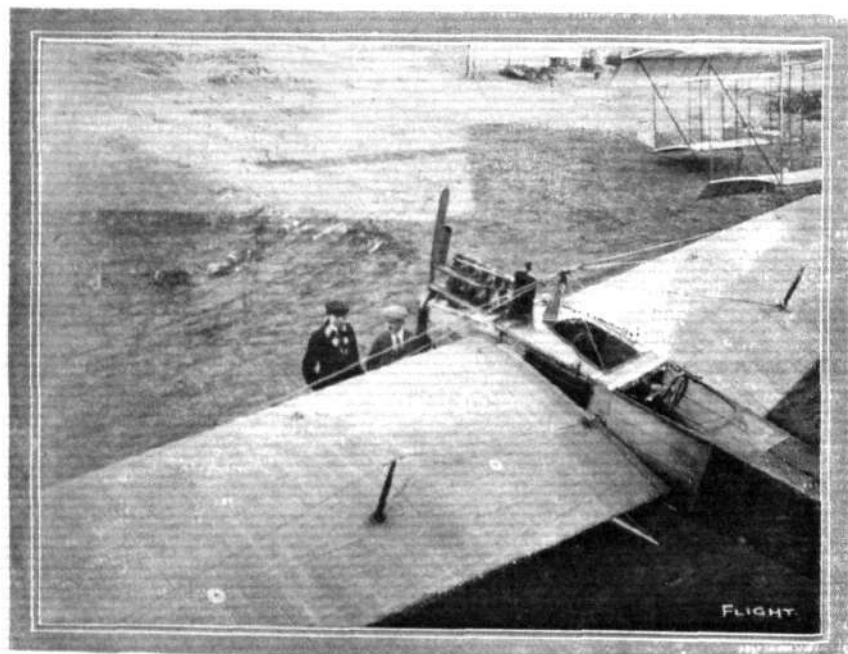
On Thursday, Messrs. Hardman and Birch were each given a flight, and both were astonished at the "Mersey's" speed and steadiness. Then with Swaby beside him Fenwick returned to Freshfield at the height of 1,000 ft., the journey taking only seven minutes for the eight miles. Monday morning Fenwick took a trip to Southport, solus, and then took up Mr. Isaacson, the maker of the Isaacson engine, who had come over purposely to watch his engine at work. He commented enthusiastically on the great feeling of safety and comfort given by the machine. Later in the day Fenwick flew a circuit of about 40 miles over Southport and district. Average height, 1,500 ft.

Liverpool Aviation School (Waterloo, near Liverpool).

ON Monday, last week, Hardman was out on the repaired Anzani and did several fine straight flights of a mile or more at a height of often 30 ft. Birch in the same machine did several short straight flights. Next day, Birch was the first out on the Anzani hopping, and then Hardman took a spell and made a fine flight including a banked right-hand turn after a flight of about a mile and a-half. He also made several other straight flights of nearly two miles. Birch then took the tiller, and in a flight of nearly two miles long completed a left-hand turn. Melly had the two-seater out and took Birch a cross-country flight of 25 minutes' duration over the surrounding country and over Sefton Church, at an average height of 800 ft., during which Birch took photographs of his home and Sefton Church.

London Aerodrome, Collindale Avenue, Hendon.

Grabame-White School.—Monday morning last week opened beautifully and the school was hard at it soon after daybreak, Mrs. Stocks was doing straight rolls and Capt. Nicholas straight flights on monoplane No. 4. On biplane No. 3 Mr. Lewis Turner put in some straights for instruction to Commander Yeats-Brown in the passenger seat. Messrs. Roupelle and Kershaw did straight



A REMINISCENCE.—The Flanders monoplane at Brooklands, as seen from the roof of its hangar. In conversation before it are Mr. E. V. B. Fisher, the pilot in the muffler, and Mr. Dukinfield-Jones.

flights, and Messrs. T. O'B. Hubbard and Manton circuits. On biplane No. 10 Mr. Lewis Turner was out for test flights and passenger flights, afterwards making exhibition flights for press photographers.

Mr. Morris on Tuesday was making straights on biplane No. 3, and Mr. Lewis Turner giving instruction flights on the same machine.

On biplane No. 3 Messrs. Morris and Roupelle next day were at straight flights and Mr. Manton at circuits. Capt. Nicholas also put in straights on monoplane No. 4. Mr. Lewis Turner flying straights and circuits on biplane No. 10 for pupils' instruction, taking them in the passenger seat in turn, and finally putting Mr. H. C. Biard through the second test for *brevet*, which he flew in fine style, being observed by Messrs. H. Barber and W. Ridley Prentice, of the Aeronautical Syndicate, and Mr. Georges Preseill, of the Blériot School.

Mr. Lewis Turner opened work at 4 a.m. on Thursday by flying circuits on biplane No. 10 for pupils' instruction, afterwards testing biplane No. 3, which had been fitted with a new tail. Finding too much play on the elevator-bracket, he descended, had same adjusted, and resumed test, machine then flying well. In the afternoon, Mr. Turner was at circuits on biplanes Nos. 10 and 3, afterwards taking up three passengers. Capt. Nicholas making good straights on monoplane No. 4, and Mr. Morris at straights on biplane No. 3, whilst Mrs. Stocks and Mr. Fowler were both busy flying circuits on biplane No. 10. During the afternoon Mr. Hucks returned from Weymouth, where he had been manœuvring over the fleet, leaving Weymouth on his Blériot at 3.20, and arriving at Hendon an hour and fifty minutes later.

Mr. B. C. Hucks was out on Friday afternoon on monoplane No. 6, flying several circuits. Mr. Lewis Turner put in straights, circuits and landings *en vol plané*, &c., for the benefit of his pupils.

Saturday, Mr. Lewis Turner was at work early testing machines, &c., for the second meeting in the afternoon, and flying many circuits with two new pupils, Lieut. B. T. James, R.E., and Mr. Malcolm Stuart occupied the passenger seat for instruction.

W. H. Ewen School.—Although the weather has been none too favourable during the past week a good amount of practice has been put in by the pupils. On Wednesday, Thursday and Saturday, Messrs. James, Edmund, Apar, Lawford, Ware and Capt. Chamier did some good rolling and flying on the Blériot with MM. Dubois and Baumann, making fine flights on the Deperdussin. Messrs. Gist and Warren also got in some good work. On Tuesday Ewen made a very fine exhibition on the little Caudron biplane notwithstanding the air was very tricky. Major Skipwith joined the school and had his first instruction on the Caudron. The school is being rapidly enlarged, and the two new Caudrons are expected in the course of the next few weeks. One of these will be a 60 two-seater, while the other will be a 35 two-seater for the instruction of the pupils in the air.

Salisbury Plain.

Bristol School.—Jullerot was the first out on Monday last week followed by Bendall. Lieut. Pickles was then taken out by the former, whilst Mr. Campbell was taken for a tuition flight by Bendall. Messrs. Jennings and Smith Barry made good flights on tractor biplanes, flying for two circuits, Captain Corder being also on a school biplane. Lieut. Stuart got in some useful work on one of the "Bristol" monoplanes, first of all putting in some rolling practice, and then going for short straight flights. Jullerot was with Lieut. Wall, but nothing further was done, the wind having risen considerably.

Very early Tuesday morning Bendall was testing the conditions with Mr. Campbell as passenger, Pixton being out a little later on with Lieut. Dawes. The wind was very tricky, and further flying was abandoned.

Wednesday morning was very windy, and little work was possible, however, towards the latter part of the afternoon Bendall set out for a solo, after which Mr. Lindsay Campbell made a very fine solo with right and left-hand turns and sharp banking. This pupil has only been at the school a week or so and he has made remarkably fine progress. After making a good landing after the first trip, he set out again and this time performed very creditably. Lieut. Dawes was up for two solos, Mr. Jennings and Lieut. Stuart each having one trip. Mr. Smith Barry brought matters to a conclusion by a solo on one of the monoplanes.

After Jullerot had made a trial, Thursday morning, Mr. Campbell ascended for a solo, which he carried out very successfully. Pixton took Major Boyd Moss and Lieuts. Dawes and Pickles for tuition flights, Jullerot afterwards going out with Major Boyd Moss. Lieut. Hall, who is getting on splendidly with the "Bristol" monoplane, carried out an excellent flight on one of these machines, flying for two circuits. Messrs. Smith Barry and Jennings were out for practice on various types of machines, Jullerot taking Lieut. Wall for tuition.

Very little work was done Friday, owing to the bad state of the

weather. Passenger flights were given to the pupils, but no solo flights were permitted.

Bendall was the first out on Saturday morning, testing the conditions, after which Mr. Campbell made a good solo, Lieut. Dawes also being out for two trips. Messrs. Jennings and Smith Barry each took up one of the tractor biplanes, whilst Lieut. Stuart flew for a circuit on one of the monoplanes.

After Jullerot had made the usual trial in the evening, he took out Mr. Delaplane, completing two circuits. Jullerot then set out on a new monoplane just received from the works at Filton. Taking Bendall as a passenger, he had a fine trip, the machine flying splendidly, and landing very gracefully. Jullerot afterwards ascended with Mr. Coanda, and flew for a couple of circuits, Mr. Coanda having charge of the controls. This machine has many new features, chief among them being a dual control, the pilot and passenger sitting side by side. Bendall was flying first with Major Boyd Moss, and then with Mr. Pendergast, a new pupil.

Useful work was done at times on Sunday, in which many of the pupils took part. The wind was very strong, however, and it was not deemed advisable to permit pupils solo flying.

Royal Flying Corps.—There is not a great deal to record owing to the changes which have been taking place, Capt. Fulton having handed over the command of this section to Capt. Brooke-Popham, while several other officers have been transferred. On Wednesday of last week, Lieut. Reynolds made a forty minutes' cross-country flight with Corporal Vagg on "F 5," finishing with a neat spiral *vol plané* from a height of 700 ft. Capt. Fulton was out on the Deperdussin monoplane, and then changed over to "F 4," on which Lieut. Conner also put in some scouting practice. The next morning Capt. Fulton was first out on the Deperdussin and then took up Corporal Ridd on "F 4," after which Lieut. Conner and Corporal Vagg mounted the machine and made a useful flight. Lieut. Conner was afterwards practising on a single seater monoplane. Capt. Burke brought out the Army machine which he had flown over from Farnborough, and after testing the 60-h.p. Wolseley engine set off on the way back to Farnborough, flying very steadily at a height of a thousand feet. On Friday the weather was very rough, but Capt. Fulton ventured out for a trip on "F 4." Saturday no work was done owing to Lieut. Barrington-Kennett taking a party of non-commissioned officers and men to London to celebrate the winning of the Mortimer Singer prize. They had dinner at the Holborn Restaurant at which Capt. Loraine was in the chair and several other officers of the R.F.C. were present. A visit to the Palladium wound up an enjoyable day. There was no outdoor work on Sunday, and on Monday Lieut. Conner flew over to Farnborough on "F 5." In the afternoon Capt. Loraine followed him on the Deperdussin monoplane, while on Tuesday afternoon Capt. Brooke-Popham and Lieut. Barrington-Kennett followed their example, the mounts being "F 7" and "F 8" respectively. On Wednesday the Corps went under canvas at Larkhill Camp.



The Caudron hydro-biplane in flight.

THE DESIGN OF A SCOUTING AEROPLANE.*

By **BRIGADIER-GENERAL D. HENDERSON, C.B., D.S.O.**

THE title of this lecture does not mean, as you may have thought, that I am going to enter into competition with skilled aeroplane designers or harbour intentions of teaching them their business. The purpose is quite different. I desire to put before you what are the qualities that will be demanded in an aeroplane which is used for the purpose of acquiring information in war. I do not wish to praise, or to disparage, any particular type of aeroplane as a flying machine. I speak solely of the suitability or otherwise of types as instruments of war.

Before plunging into the subject of the design of an aeroplane designed for scouting, it is necessary to consider a little the work which the scouting aeroplane is intended to accomplish, and for this it is advisable that one or two points with regard to reconnaissance in general should be made clear. Reconnaissance, which is quite apart from secret service, has always in the past followed two main methods. The first is that in which a force is sent out to gain information, and is of such strength that it is prepared to deal with any opposition which it is likely to meet, and to fight for its information. The second method is that in which a very small body, possibly only a single man, is sent out in the hope of his evading the enemy's protective parties, and, by stratagem and concealment, making observations of such of the enemy's dispositions as may come within his view.

If you like to go back to the fourteenth century, you will find that, on the day of Crecy, King Philip of France, adopting one method, sent out four knights to reconnoitre the English Army, and bring him tidings of their dispositions. This reconnaissance was eminently successful. The leader of these four was a man well known (although not perhaps by name) to history; he was Henry le Moyne, one of the knights who linked their reins with those of the blind King of Bohemia, and left their bodies to mark the farthest point that any foe had penetrated into the English lines.

Ten years later, before Poitiers, we find the Black Prince adopting the other method, and sending a force of some hundreds of men at arms to observe the French Army. So strong was this party, and so ready to fight for their information, that they charged into the rear of the French main force, and made off with a number of prisoners.

Marlbrough used for reconnaissance bodies of cavalry of considerable strength. Wellington trusted mainly to the efforts of single officers, mounted on the best horses that could be procured. Throughout all military history one finds these two methods employed, sometimes simultaneously, sometimes alternately.

Of the first method of obtaining information—by force—it is only necessary to speak here for the reason that the troops which are organised for reconnaissance on a large scale present the most serious difficulties and dangers to hostile reconnaissance on a small scale. Whatever equipment or means of transport may be used by a scout, his most dangerous opponents are those of his enemy who are similarly equipped but in stronger force. The most dangerous enemy of a scout on horseback is a stronger force of the enemy on horseback; if the scout be on a bicycle, bicyclists are his most dangerous opponents. If a scout be using an aeroplane, his greatest danger will arise from the enemy's aeroplanes, in stronger force. The advantage that the single man or smaller body has is that a large force is usually slower, more visible, more noisy, and more cumbersome.

A scout has always two duties to perform and two difficulties to overcome. He has first to get information, and secondly he has to bring it back. To be successful he must carry out both. But while he may do valuable work, although he carries out the first duty only partially, he must carry out the second completely. Incomplete information is of some value if delivered to the person who can make use of it, but the best information is of no use if the scout who obtained it is killed or made prisoner before he can pass it on.

Therefore it is that, so long as the means of transport used by a scout does not preclude the possibility of acquiring information, the most important requirements of the animal, or vehicle, or vessel, or machine for scouting purposes are first, the possibility of escaping observation, and second, suitability for eluding the enemy, if discovered. For example, a horse used by a scout should be, for the first purpose, well trained, not nervous, not given to neighing; for the second purpose it should be fast, a stayer, a good fencer, and handy. If the scout should have to carry out his operations from a boat or vessel of any kind, such vessel, whatever power may be used to propel it, should be silent, it should emit no visible smoke, and it should be of a dull colour; for the second purpose it should

be fast, it should be able to cover long distances and it should be handy.

If you will consider any possible means of transport which might be used by a scout, I think you will come to the conclusion that the four essentials, always allowing a certain facility of observation, are invisibility, silence, speed and manœuvring power.

On these lines one may consider the requirements of an aeroplane for scouting work which may have to evade a number of machines designed for fighting. It seems to me that the problem will present many similarities to the problems of reconnaissance that have had to be considered by all commanders of troops from the earliest days.

There is another valuable attribute, which I only mention to show that it is not forgotten. The range of an aeroplane depends on its speed, the trustworthiness of its engine, and on the amount of fuel which it can carry. With regard to the engine, you must get the engine of the best design and the best workmanship that is procurable, coddle it like a baby, feed it on the best petrol and oil, and put your trust in Providence. As to the amount of fuel and lubricant to be carried, that depends on the particular duty to be performed. I would not dare to guess at a standard duration of flight for which fuel might have to be carried, but I am inclined to think that for some time it will not be necessary to exceed, in war, the records already attained in peace.

I have spoken, so far, about methods of reconnaissance which have been approved in the past, for the reason that I am anxious to get a firm starting point, a fixed point of departure, before entering on speculations concerning the future. For any consideration of aeroplane reconnaissance is at present speculation; we have no data as to the behaviour of either man or machine when tried in war in face of opposition of the same type. Of the possibilities of aerial reconnaissance when there is no aerial opposition, we can speak with some certainty; not only can the limitations of hostile action from the ground against a well-flown aeroplane be calculated with some accuracy, but we have also a certain amount of practical experience, gained in Tripoli to assist us. That problem presents but little difficulty, and is capable of definite solution. But the problem of warfare in the air is altogether a different matter. It is not susceptible of definite calculation, and we have no practical experience to guide us. We can only speculate, and to keep our speculations within reasonable bounds we can use analogies from other methods of reconnaissance, we can use knowledge of war and of human nature in war, we can apply mechanical knowledge, and, most important of all, we can try to use common sense.

The beginning of my speculation, as you may have guessed, is that it is probable that two types of aeroplanes will be evolved for military purposes, a fighting machine and a scouting machine. This is only an opinion; it is possible that these two types may merge into one; it is possible that they may be diversified into half a dozen. But judging by the analogy of reconnaissance on the ground, these two types will be found necessary. The fighting aeroplane will be required to overcome the air forces of the enemy, if possible to drive them to the ground; at any rate to inflict damage upon them, and, in spite of opposition, to penetrate far enough to gain accurate information of the dispositions of the enemy's troops. Also it will be required to block the enemy's endeavours to gain information by bringing to action any of his aeroplanes which may approach our lines. To fulfil these purposes the fighting aeroplane must be of such design that weapons can be used effectively by the passengers or pilot.

Here, I may say, quite frankly, that I have not seen, nor have I heard of, any aeroplane that can be considered a fighting aeroplane. There are certain types that could, with much alteration, be adapted to the purpose, but it does not seem that any designer has yet endeavoured to produce a machine of this kind. Designers, in fact, have been busy enough producing machines that will fly, and fly well and safely, without thinking of the exact use to which they might be put in war. And the fighting machine is not going to be easy to design. When you consider the use of weapons from an aeroplane—and by weapons, I mean real man-killing guns or rifles, not childish devices for dropping bombs, or grenades or crackers—you will see what limitations it imposes. No tractor screws, I am afraid, and your fighting passengers placed in front of all planes and struts and wires and stays. Then lifting power for three or four men with weapons and ammunition, and lastly, speed to give some chance of manœuvring on equal terms with your adversary.

I should like to say here, that when I talk of the enemy, I take it for granted that the enemy is as well equipped, in personnel and material as we are; that his pilots are as skilful and as brave, and his aeroplanes as fast and as powerful, type for type.

(To be concluded.)

* Paper read before the Aeronautical Society at the Royal United Service Institution on Wednesday, May 8th. Lieut.-General Sir James Grierson, K.C.B., in the chair.

FOREIGN AVIATION NEWS.

Flying 700 Kilometres in a Day.

LIEUT. DE BRIEY who on the previous Saturday made the journey between Rheims and St. Cyr on his Deperdussin machine, succeeded on the 9th inst., in flying 700 kiloms. in one day. Starting from St. Cyr he went by Rouen, Dieppe, and Le Crotoy, where he made a stop of forty minutes for lunch and replenishments, then proceeding via Abbeville, Douai, and Laon, where a stop of twenty minutes was made for petrol. The trip was then completed to Rheims, where he arrived at 1.20 having taken seven hours and a-half for the distance of 540 kilometres. During the afternoon he started off again and made a circular trip of 165 kiloms. in two hours over Rethel, Bouzier, Chalons and back to Rheims.

Cross-Country Flying by French Officers.

A NUMBER of very fine cross-country flights were made by the French Military Officers on the 11th inst. Lieut. Grezeaud, on a Farman, went from St. Cyr to Mailly Camp, whilst Lieut. Migaud on a Breguet from Mailly Camp to Douai. Ensign Fournier started from Rheims with the intention of flying to Dunkerque, but landed because of the mists at La Motte Breuil after flying an hour and a-half. Lieut. Pierra, also on a Farman, who started from Rheims at the same time, got to La Motte Breuil five minutes earlier, but went on and landed at Beauvais. There he replenished his petrol tank and restarted for Harve, but came down at Rouen where he was joined on Monday by Fournier. Lieut. de Jensaac, also on a Farman, on Saturday flew from Chalons to Amiens, where he landed, and later in the day returned to Mourmelon.

Vidart Flies to See Vedrines.

ANXIOUS to see his *camarade* Vedrines, Vidart decided to fly from Amberieu to Paris on the 7th inst. The weather was very unsettled when he started, and it took him an hour and three-quarters to get to Dijon, where he stayed an hour and a-quarter. He then started off in the direction of Troyes, which he reached safely and made a landing for a few minutes. He restarted from there but was brought down by the blinding rain at Maison-Rouge, a short distance before reaching Nangis. As the weather showed no signs of improvement he decided to wait until the following day, when he successfully completed the journey, landing at Issy about half-past ten.

Inspecting the Grand Prix Circuit.

AFTER paying his visit to Vedrines, Vidart decided to fly over to Saumur in order to have a look at the course proposed for the Grand Prix race of the Aero Club of France. He started from Issy at 6 o'clock on Monday morning and covered the 300 kilos. to Saumur in four hours including a short stop at Tours. In the evening he was flying over Saumur but in landing at Breil broke a propeller.

Ae.C.F. Grand Prix.

ANOTHER entry, a Breguet, has been received for this event, thus making eighteen.

A Borel Hydro-Monoplane.

CHAMBENOIT having fitted his Borel monoplane with detachable floats has been making a series of experiments with it over land and over the sea at Bougival in Jersey, obtaining very satisfactory results.

Henry Farman at Buc.

ON the 10th inst. Henry Farman on his monoplane flew over from Chalons to Buc in order to meet the Grand Duke Alexander of Russia to explain to him the details of his monoplane and also his latest type of biplane. He took up his father for a trip on the former machine, making several very sharp turns during the flight.

Long Flights at Farman School.

AMONG the large number of very fine flights made during the past few days at the Farman School at Buc may be specially mentioned those of Lieut. Polli and Adjudant Ducasse on the 8th inst., when they were flying for an hour and a-half and that of Lieut. Noe with Capt. Langier on the 10th when they made a long reconnoitring flight over St. Cyr, Versailles, Palaiseau, and Chevreuse. On the following day Lieut. Noe took several officers for trips over Versailles and afterwards carried Sergeant Beausure de Sayssel along the Seine Valley to Juvisy, Bretigny, and Palaiseau, passing over the Senart forest. On the 11th, Lieut. Cesari made a flight of an hour's duration.

Mdlle. Marvingt Changes her Mount.

ONE of the latest pupils to join the Deperdussin School at Courcy-Betheny near Rheims is Mdlle. Marvingt who some time ago used to pilot an Antoinette machine.

A Promising Deperdussin Pilot.

GUITON, a French non-commissioned officer who has recently learnt to fly at the Deperdussin School at Rheims, was up for an hour on the 8th inst., mostly at a height of 1,200 metres. He concluded by a fine *vol plané* from 500 metres high.

At the Farman School at Etampes.

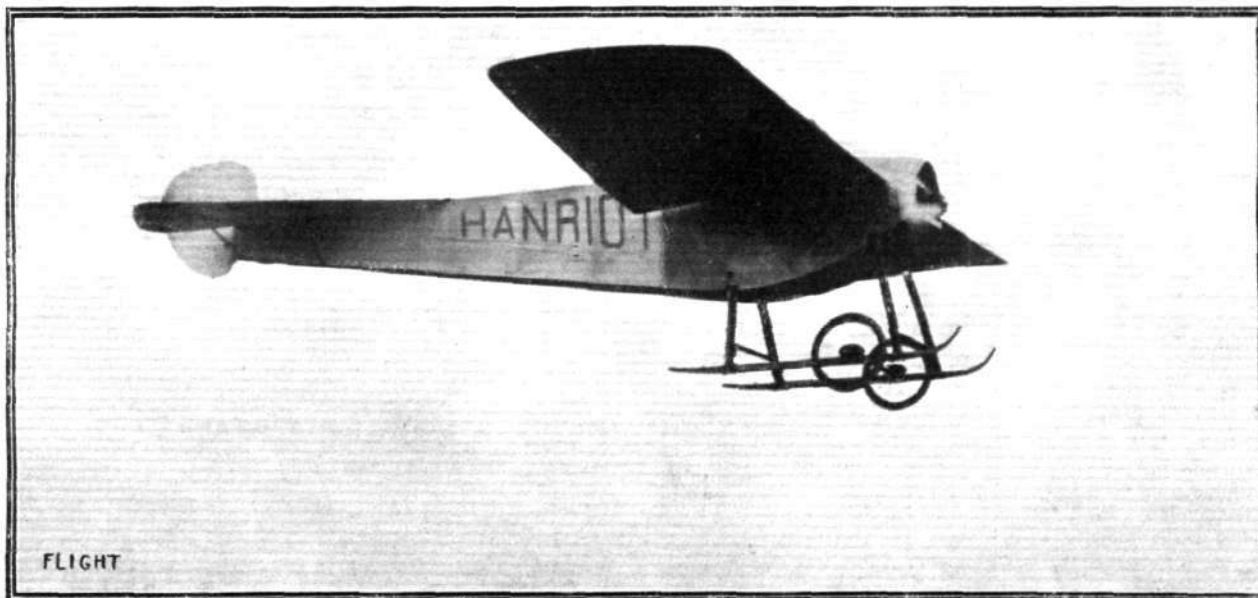
ON the 8th inst., Chevillard returned from Buc to Etampes in splendid style, and Kamberos was practising high flying. Two days later the Greek officer made his first qualifying flight for a superior certificate, while a second test was made on the following day.

Successful Tests with New Train Monoplane.

At Mourmelon, on the 8th, Lieut. Levassor made some fine tests on the new Train monoplane with metallic wings. Rising to a height of well over 1,000 metres he went off in the direction of Rheims, and finally landed by a splendid glide after being in the air over an hour.

Progress at R.E.P. School.

THE fine flying of Gordon Bell has been greatly missed at the R.E.P. School at Buc during his absence in Turkey, but some variety has been given to the daily doings by the Turkish officers, who are being taught to fly. On the 10th inst., Granel, the chiet pilot, was flying over Versailles, and Lieut. Precardin made a flight of an hour and a-half's duration.



Side view of the Hanriot monoplane in flight.

Mdlle. Herveu also Tries a Deperdussin.

ANOTHER lady pilot who is taking lessons on the Deperdussin but at the Etampes school is Mdlle. Jeanne Herveu, who, it will be remembered, finished second in the competition for the Coupe Femina last year.

Wireless Messages from an Aeroplane.

ONE of the most successful tests of transmitting messages by wireless telegraphy from an aeroplane in flight was made at Chartres on the 7th inst. In conjunction with the military authorities represented by Lieut. Cheutin and Ensign Fournier, the "Radio Electricite" Co. has been conducting experiments for a long time and have at length evolved a transmitter which weighs 32 kilogs. and may easily be fitted to an aeroplane. One was fitted to a Savary biplane, and with Frantz at the tiller and M. Rouzet, the inventor, at the transmitter, a cross-country flight of 125 kiloms. was made. During the whole of the trip messages were successfully sent to the receiving station at Chartres even from 50 kiloms. away.

A Demountable Sommer Biplane.

BEFORE a military commission, at Mourmelon, on the 11th inst., Sommer carried out some tests with a new biplane he has so designed that it may be dismantled quickly. After Sommer had flown on it for an hour, it was dismantled in 2 mins. 45 secs. and then re-erected in flying order in 10 mins.

Train Flies for an Hour.

ON Saturday last, Train on one of his monoplanes was flying at a height of 1,000 metres over the Chevreuse and Bievre Valleys and after being in the air for an hour landed safely at his ground at Villacoublay.

A Nieuport for Roumania.

ON Saturday last at Mourmelon the Roumanian Lieut. Zorilano took delivery of one of the Nieuport monoplanes ordered by the Roumanian Government and by way of testing it flew on it to Rheims, where he circled round the cathedral spire, the trip occupying 35 mins.

Doings at the Hanriot School.

ON the 11th inst., at Rheims, Sippe made his first flight on the Hanriot monoplane, and appeared to find himself at home on it. Frey was flying for a couple of hours in the morning and for three hours in the afternoon. The next day the latter pilot visited Rilly la Montagne and let loose a great quantity of election literature.

Tests with Nieuport Monoplane.

A MILITARY Commission visited the Nieuport works on the 12th inst. in order to witness some tests on a Nieuport monoplane. It was found that the wings would carry a weight of 2,800 kilogs. above and 4,950 kilogs. below, giving a factor of safety of $6\frac{1}{2}$ to $9\frac{1}{2}$.

Three Nieuports for Spanish Army.

ON the 12th inst. at Madrid, Marc Bonnier was testing three Nieuport monoplanes purchased by the Spanish Government. On one machine he made a flight of two hours' duration, carrying a load of 210 kilogs. On another he took his mechanicien for an hour's trip over the Spanish capital at a height of 1,500 metres.

Issy to Mourmelon on a Voisin.

COLLIEN on Sunday piloted a new Voisin machine, Nohen type, built for de Ridder, from Issy to Mourmelon. An average speed of 115 k.p.h. was maintained.

Rheims to La Motte Breuil on a Farman.

ON Sunday, Ensign Fournier accompanied by Lieut. Cheutin, went on his Farman biplane from Rheims to La Motte Breuil, where the Clement-Bayard airship works are situated. They landed at Breville, where they were enthusiastically greeted.

The German Emperor's Prize.

THE conditions of the competition for aviation motors for the German Emperor's Prize of £2,500 have now been published. The contest will commence on October 1st, at Adlerhof and will be purely national, only being open to motors made throughout in German workshops. The engines may be between 50 and 115-h.p. but must not weigh more than 6 kilogs. per horse-power. Marks will be given for efficiency, freedom from vibration, slow running, reliability and convenience. Besides the Kaiser's prize there will be four others, viz., Imperial Chancellor's prize of £1,500. War Minister's prize of £1,250. Navy Minister's prize of £500 and a similar award offered by the Minister of the Interior.

The Upper Rhine Aviation Meet.

THE Upper Rhine Aviation week opened on the 12th inst., in a very disappointing way, as only two competitors succeeded in completing the first stage from Strasburg to Metz, although two others got through on the following day. Eight aviators actually started from Strasburg, and Hirth flew the distance of 130 kiloms. in a little over an hour. Of the other competitors, Lieut. Wirth had a bad smash at Neuf village, Lieut. Fisch landed at Saales, Lieut. Hartmann came down at Wolfshein, and Lieut. Barends returned to Strasburg after being away about an hour. Late in the evening Count Folskeel landed at Metz, having taken 15 hours to do the trip, while Lieut. Barends and Lieut. Mahucke got through on the following morning. The progress of the competition is being closely followed by Prince Henry of Prussia, who is driving his motor car round the course.

Count Zeppelin and Aeroplanes.

A report from Berlin states that Count Zeppelin is interesting himself in an aeroplane factory which has been established by a former employee of his. It is probable that these new works will shortly be turning out a machine embodying Count Zeppelin's conception of an aeroplane.

Ae.C.A. to Pay for Gordon-Bennett Defender.

THE Aero Club of America has decided upon a novel method of endeavouring to obtain a really national defender for the Gordon-Bennett Aviation Cup by inviting American manufacturers to tender for the machine. It is proposed to pay \$10,000 for the machine accepted, which would include the services of an American pilot, who would drive it in the race if nominated for same. Each tender must be accompanied by a cheque for \$1,000, which will be returned on the completion of the tests. The machines will have to fly 200 kiloms. over a five-kilometre course, in a time not exceeding 1h. 14m. 33 $\frac{3}{4}$ s. After landing at the completion of this test, the machine with all its parts and accessories must be in suitable condition to repeat the performance within twenty-four hours. The proposals have to be sent in by June 1st, and the machines to be ready by August 1st.

U.S. War Office Wakes Up.

PERSISTENT questionings in the United States Houses of Parliament appear to have at length awakened the U.S. War Office to the present position of military aviation. Mr. Stimson, Secretary of War, has just presented to the House of Representatives a long report which, besides detailing what is being done abroad, also outlines the proposal for the organisation of a flying corps for the U.S. Army. He recommends the ultimate acquisition of 150 aeroplanes, divided into five squadrons, and it is in contemplation to organise five centres of aviation for the training of Army and Militia officers. At present only three squadrons with 24 aeroplanes are to be organised.

General Allen, chief of the signal corps, estimates that 64 machines will be required for coast defence, 16 for the Philippines, 8 for Hawaii, 8 for Panama and 24 for the regular field army. The plan of organisation is based on sections, comprising one aeroplane, two aviators, one mechanic, and four assistant mechanics. Platoons include two machines; companies four, and squadrons eight, each with accompanying equipment.

The U. S. Army now has in use six machines with another six on order. It is proposed to add to the personnel of the signal corps one colonel, 12 captains, 12 first lieutenants and 30 second lieutenants for aviation service. The pay of officers actively engaged in aviation work will be raised 20 per cent. above the regular scale, while widows of men killed will be given sums equal to six months pay.



Aldershot to Chatham by Balloon.

SOME little stir was created among the peaceful inhabitants of Gillingham, a suburb of Chatham, on the 9th inst., when a balloon landed there. It proved to be the Army balloon Albert, in which two officers had attempted to make the journey from Aldershot to Eastchurch. In view of the somewhat unfavourable conditions, however, they decided to make their landing a few miles short of their destination. The balloon was packed up by men from the Royal Engineer barracks just near at hand, and the officers continued their journey by train.

For Model Flyers at Leicester.

IN connection with the Anstey Town Band Sports and Gala to be held on Whit Monday, arrangements have been made for some model aeroplane flying, and should sufficient entries be forthcoming the Committee will put up a money prize. Intending competitors should communicate with Mr. A. A. Wright, of Albion Street, Anstey, Leicester.

THE AERO ENGINE.

By G. H. CHALLENGER.

(Continued from page 429.)

Thermal Efficiency.—Apart from the economy of petrol it is an advantage on any engine to secure the highest thermal efficiency—on air-cooled engines it is practically a necessity, this does not tell against the air-cooled motor because as shown by tests the maximum power obtainable closely approximates to the highest thermal efficiency.

The thermal efficiency increases as the mixture gets weaker up to very nearly the weakest mixture on which the engine will run regularly. With mixtures containing between 17.5 and 19 lbs. of air to 1 lb. of petrol, firing back into the carburettor is liable to occur, so that in adjusting a carburettor, supposing that size of jet and the ignition are correct closely approximate regulation can be obtained by weakening (giving extra air) until popping back occurs and then lessening the amount of extra air until firing back is arrested.

Each pound of petrol represents about 18,900 thermal units, which with correct mixture of 17 lbs. of air to 1 lb. petrol, are accounted for in approximately the following manner in water-cooled engines of average size and piston speed used on aeroplanes. Indicated horse power 20 per cent. and waste 80 per cent. split up into 27 per cent. lost in heating cylinder walls and 53 per cent. lost in the exhaust.

Air Fuel.—Other things being equal, a smaller ratio of air to petrol will result in a decrease in power due to a less percentage of the thermal units being expended in useful work, and a greater percentage going to heat up the cylinder walls and exhaust.

Reference to the tabulated engine tests, Table III, 9, 10 and 11, made by Prof. Watson on a 4-cylinder Clement-Talbot motor will clearly show the effect of various mixtures on the amount of waste heat which goes to heat up the cylinder walls and exhaust.

The principal defect of the air-cooled motor in still air, apart from defective carburation, is that if run at its maximum power continuously, the cylinders soon become too hot for efficient lubrication, and loss of power results from excessive friction, and again the incoming charge is heated and expanded by contact with the overheated cylinder walls, valves and piston, and by intermixing with the residue of the previous exhaust left in the compression space so that less mixture is drawn in. The compression pressure is also higher owing to higher temperature of mixture.

Two diagrams were taken by Prof. Callender from an air-cooled cylinder under similar conditions except that the cylinder was hot in the one case and cold in the other. The hot cylinder showed the higher compression pressure and the lesser explosion pressure, thus showing a double loss.

Gills.—The greatest limitation to air-cooling is the rate at which the cylinders can part with their heat to the surrounding air. Air is a bad conductor of heat, but by forcing it strongly against the cylinders and increasing their area of contact by means of gills, this defect has been reduced to a considerable extent.

The combustion heads of a Gnome rotary motor on the test bed move through the air at a velocity of something like 95 miles per hour, which velocity is relatively increased when the engine is moving through the air on an aeroplane.

Rotary Engines.—Now that improved aeroplane design admits of much higher aeroplane speeds for a given horse power, than were attainable when the Gnome engine began to make its reputation, the stationary air-cooled engine is beginning to make headway. Whatever the speeds subsequently obtained the rotary air-cooled engine will always have a greater cooling effect than the stationary air-cooled engine, but this ratio will decrease with increase of aeroplane speeds. Apart from heavy oil consumption and other troubles attendant on its rotation *en bloc*, it is probable that the rotary engine will drop out because at the higher speeds in view, it offers by its rotation considerable resistance to advancement, even neglecting the resistance of the necessary oil guards.

Three air-cooled stationary cylinder engines which have been very successful on aeroplanes, show very similar results in horse power per cylinder.

TABLE II.

Makes stated h.p.	Motor.	No. of Cyls.	Bore and Stroke.	Revs.	Piston Speed.	Machine.	h.p. Required for Normal Flight.	h.p. per Cyl.	Normal Flight Speed.
60	R.E.P.	5	110 × 160	1200	1260	R.E.P.	44	8.8	58
30	Nieuport	2	130 × 135	—	—	Nieuport	17	8.5	53
25	Anzani	3	103 × 120	1600	1260	Blériot	24.8	8.1	44

Maker's h.p.—Horse power required and normal flight speed for R.E.P. and Nieuport are deduced from Eiffel's experiments with $\frac{1}{10}$ scale models. The Blériot head resistance was calculated. It will be noticed that the maker's stated h.p. in the case of the R.E.P. and Nieuport are considerably in excess of the h.p. required for normal flight, whilst in the case of the Anzani there is practically no difference.

The maker's stated h.p.s. may represent the powers which are obtainable on the test bench, but the continuance of this developed power would depend upon a sufficiently strong blast of air on the motor to dissipate the heat units lost in heating the cylinders. Pierre Marie on a R.E.P. machine put up a record of 330 miles in a little over 5 hours, that is about 66 m.p.h. Nieuport put up a record on his own machine of 50 miles in about 45 minutes or 66.5 m.p.h.

Blériot's early cross-country flights on the machine which afterwards was the first to cross the channel were made at about 38 miles per hour.

Resistance.—If the resistance to advancement of an aeroplane increases with the square of its speed, then in the record cases given above, the R.E.P. engine developed 11.2-h.p. and the Nieuport 11.6-h.p. per cylinder with a blast of air of 66 miles per hour. Both machines were no doubt very specially tuned up for these efforts, but as they possess a good margin of power over that required for normal flight we should expect them to be fairly consistent flyers in ordinary aerodrome work without very delicate tuning up. The Nieuport suffers greatly from the fact that a derangement of one cylinder affects 50 per cent. of its power whilst the same trouble on the R.E.P. will only affect 20 per cent. of its power.

If one cylinder of the Nieuport ceases to fire or to fire very erratically it has not sufficient power left to keep the machine in the air, apart from the fact that the firing balance is so upset that it is necessary to switch off entirely and descend, which may account for the small amount of serious cross-country work attempted with this machine. The fine performance of Gibert on a R.E.P. in the European Circuit needs no comment. The maximum h.p. continuously developed by the Anzani motor in an air blast of about 40 miles per hour closely approximates to the minimum calculated h.p. necessary to fly the Blériot machine.

When this absence of power margin is fully appreciated, one is forced to admire the courage of Blériot in setting out on his famous first crossing of the channel by aeroplane. We now find the usefulness of this machine practically confined to the first essays of pupils, in rolling and hopping.

H.P. per Cylinder.—The five hour flight of the R.E.P. monoplane shows that present practice admits of 11.2 h.p. per stationary cylinder, with an aeroplane speed of 66 miles per hour without the use of auxiliary cooling fans, so that air-cooled engine power is simply limited by the number of cylinders employed. If 14 cylinders are employed as in the 100-h.p. (maker's stated h.p.) Gnome we have a motor of 156 actual h.p. In order to obtain the best results from simple air cooling it is necessary that the cylinders shall not be shielded from the full blast of air delivered by the aeroplane's speed, for which reason the radial arrangement of cylinders in one plane offers the simplest solution; the power of the motor being limited by the greatest number of cylinders which can be practically arranged in this manner.

In order to see if power per cylinder can be increased, it will be necessary to consider the conditions under which the internal combustion engine works. As all engines in common use on aeroplanes work on the "Otto cycle," this type only will be considered.

The Otto Cycle.—The "Otto cycle" gives one explosion or working stroke per cylinder per two revolutions, the four strokes being occupied as follows: 1st, induction, or the filling of cylinder with combustible mixture; 2nd, compression of the charge; 3rd, explosion or working stroke; and 4th, exhaust of the products of combustion.

The power of the Otto cycle internal combustion engine, depends upon the average of the pressures between the maximum attained at the beginning of the working stroke by the liberation of the heat of the compressed charge upon ignition, and the pressure at which the products of combustion are exhausted at the end of the working stroke.

The more the explosion temperature can be reduced in actually performing work, the greater the efficiency and the less the heating of cylinder walls.

(To be continued.)

AERONAUTICAL SOCIETY OF GREAT BRITAIN.

OFFICIAL NOTICES AS SUPPLIED BY THE SECRETARY.

Programme of Meetings.—Wednesday, June 12th, 8.30 p.m. G. Holt Thomas on "Hydro-aeroplanes."

Programme for Session 1912-13.—The meetings of 1912-13 Session will be held on second and fourth Wednesdays at the Royal United Service Institution, at 8.30 p.m., beginning October 9th. Additional to the papers already announced is: C. Grahame-White on "Practical Aviation."

Election of Associate Fellows.—The next election of Associate Fellows will be held in June next. The last day for the receipt of applications will be *Tuesday, May 28th*, and the result of the

election will be declared on Wednesday, June 12th. Application Forms may now be obtained from the Secretary, and it should be noted that it is not necessary that the applicants should be Members of the Society.

Informal Meetings.—Informal meetings for the discussion of set subjects are held at the Society's Offices, 11, Adam Street, Adelphi, on Mondays, from 5 p.m. May 20th, "Aeroplane Control: its simplification and standardization."

T. O'B. HUBBARD, Secretary.

SCOTTISH AERONAUTICAL SOCIETY.

THE third annual meeting of the Scottish Aeronautical Society was held last week in the Institution of Engineers and Shipbuilders, Glasgow, Professor A. Barr, President, being in the chair.

The chairman intimated his retiral as President in accordance with the rules, and the Society unanimously appointed Professor J. H. Biles, LL.D., one of the Vice-Presidents, to the vacant office.

The following gentlemen were elected Vice-Presidents of the Society:—Professor T. Hutson Beare, D.Sc., M.Inst.C.E.; Alexander Gracie, M.V.O.; Hugh Reid, D.L., M.Inst.C.E.; A. F. Yarrow, M.Inst.C.E.; Archibald Denny, M.Inst.C.E., LL.D.; Colonel John A. Sillars; D. Gordon Anderson; and Professor Archibald Barr, D.Sc., M.Inst.C.E.



Conducted by V. E. JOHNSON, M.A.

Model Flying in America.

THE following communication has been received from Mr. Nicholas S. Schloeder (secretary of the New York Model Aero Club), and being of especial interest we give it *in extenso*:—

"My attention has been called to your remarks on American model records in your issue of March 30th. As Secretary of the New York Model Aero Club, which has an active membership of over one hundred, I take the liberty of informing you on American model affairs.

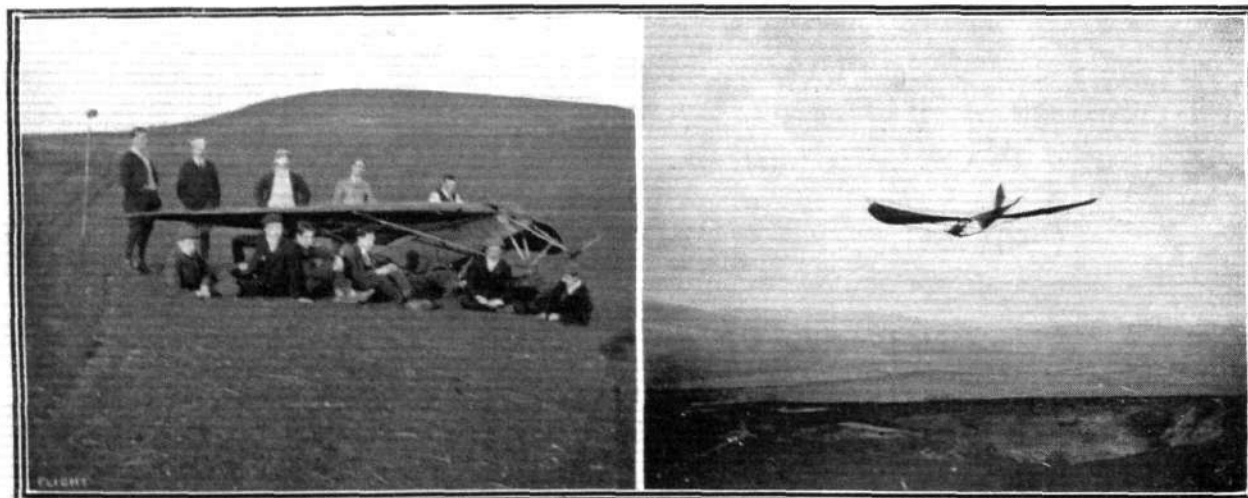
"Commenting on the big jump from the record of 222 ft. 3 ins. made by Percy Pierce in December, 1910, to that of Cecil Peoli, (1,691 ft.) in July, 1911, you say that the latter must have flown an English-built machine. This sudden jump is easily explained. In the first place, *Pierce's flight was made indoors, the model starting and rising from the ground under its own power and was limited by the size of the hall.* In fact, since the beginning of model contests in 1907, up to about June, 1911, practically 95 per cent. of the contests were held indoors. These same models when later taken outdoors, though still equipped with skids to rise from the ground, soon made 800-ft. flights.

"At least six different model flyers figured in increasing Pierce's old record to this mark. Mr. Peoli's model was not only built in America but was entirely different in design and construction from any English model.

"While it is admitted that we owe something to E. W. Twining and other pioneer English experimenters, yet progress in America has been along its own lines. Until recently, wire and silk wings, steamed propellers and other points of construction common to English models have been rarely used. In fact among eight leading model constructors but one used either.

"You say further, that duration records furnish a better opportunity for comparing English and American models than distance, as they are less effected by the velocity of the wind. In my opinion, the time that a model remains in the air is scarcely less independent of wind conditions than the distance it travels. On several occasions I have seen models tossed about for 30 and 40 seconds after the propellers stopped. Furthermore, a distance and duration model are two different things. The Easter model, which flies about one-half of the usual amount of square inches to the ounce, necessarily flies with a tremendous speed, and which, considering that it is equipped with only seven-inch propellers, means a quick unwinding of the rubber. Yet this model flies 400 yards almost everytime even if flown in a dead calm.

"The first duration contest held by this club last September was won by Charles Latimer, with 48½ secs. Soon afterwards, Cecil Peoli made 48½ secs. Later this was raised to 56 secs. by Stuart Easter; to 58 secs. by Amour Selly; to 65 secs. by Herzog Selly; and, finally, to 91 secs. by Percy Pierce, on March 17th,



The Amberley Flying Society's glider, presented by Mr. Weiss, Mr. Graham Wood being in the pilot's seat.—On the right the glider, ballasted, is in full flight. This Weiss glider is claimed to be the smallest man-carrying glider in existence.

1912. In this flight the rubber dropped off on one end, causing the machine to descend very rapidly. Now, flights of between 50 and 60 secs. are made so often as to attract no attention.

"The official records of this club, and also of the United States, are as follows:—

"Distance—1,814 ft., by Percy Pierce, December 26th, 1911.

"Distance in competition—1,743 ft., Stuart Easter, March 10th, 1912.

"Duration—91 secs., by Percy Pierce, March 17th, 1912.

"Distance, rising from ground (indoors)—263 ft., Stuart Easter, March 25th, 1911.

"No distance or duration contests for models rising from the ground have been held for sometime.

"Unofficial hydro-aeroplane flights have been made. In regard to altitude records it has been a matter of guesswork, yet about 250 to 300 ft. is a conservative estimate of the height attained on February 25th, 1912, by a 1½-oz. model with celluloid planes, built by George A. Page, Jun. In spite of a swift descent it remained in the air exactly 30 secs. after the propellers stopped.

"Unofficial distance flights of between 2,000 and 3,000 ft. have been made by about six members flying six different models.

"The New York Model Aero Club is fully prepared to meet any club or group of model flyers in the world. Unfortunately, the great distance separating us from England is a great hindrance to international competition. Even this might be overcome if we were to send one or two representatives to England, yet this limited number is very unsatisfactory to us, as six or even a dozen flyers would be just what we want. For the present, nothing would please us more than to have Mr. Mann or any other English flyer arrange with an agent in the vicinity of this city, whereby he can have a model of his fly in one of our contests at Van Courtlandt Park, and in my honest opinion, I believe he would have some difficulty in being placed.

"It has not been my object to belittle English model flyers, for they are held in high respect among us, yet I do want to remove the impressions that it is necessary to import an English model if we wish to make a record of 1,691 ft. or 60 seconds."

The Latest Australian Record.

Mr. H. P. Wood (Melbourne, Australia) writes us further:—

"Since writing you last, I have had more success with my 9-oz. model. On March 31st, with my father (Engineering Draughtsman Melbourne and Metropolitan Board of Works) and a friend, Mr. W. P. Chancellor (Chief Engineer at Johns and Waygood, Ltd.), as timekeepers, I set out to try and beat the duration record of 100 secs. put up by the "Mann" monoplane (FLIGHT, January 20th, 1912). The weather conditions were ideal, almost complete calm; time, 4.30 p.m. The first flight was one of 113 secs., but later on the machine did a flight of 118 secs., doing two complete circles with a net travel from point of discharge to landing of 600 yards (my longest flight with this machine is 720 yards). The following is a description of the machine:—Length, 4 ft.; span, 4 ft.; two propellers, 11 ins. diameter, 19 ins. pitch, each driven by 8 strands of ¼-in. strip rubber wound 1,000 times. The above duration was mainly owing to the altitude attained by the model, as the glide took 45 secs. after the propellers had stopped revolving."

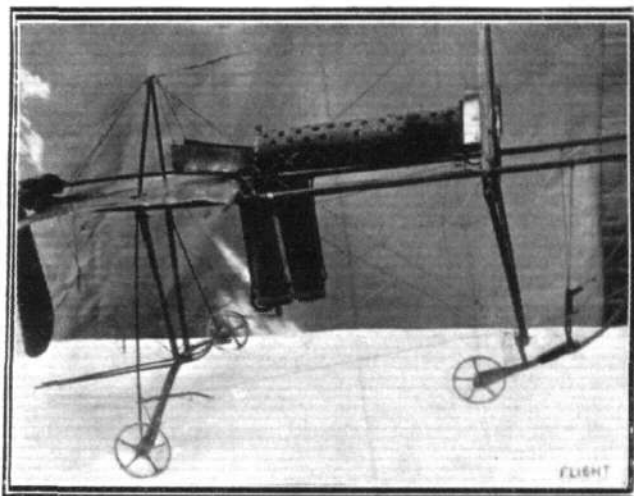
Commenting on the above Mr. Wood omits altogether to state the nature of the ground on which this record was made; for instance, it makes all the difference whether these flights were made on level ground or from the top of a hill. If the former then presumably there is another little heap of "ashes" to bring back from Australia.

Model Flying During the Eclipse.

Mr. H. Kerruish says: "Apropos of a remark made by Mr. Beeching, of the Ealing District Ae.C., that his model would not fly during the eclipse. I should like to state that I experienced the same thing, my monoplane flew well in the early morning, also in the evening, but during the eclipse would only perform alarming 'stunts' and finally tried to get underground, apparently awed by the phenomena."

Experiments on Wimbledon Common.

We give, this week, an illustration showing the altered chassis of our steam-driven model. Early on Saturday morning, May 11th, a successful though but short flight was made on the above ground. Knowing full well the bad nature of the ground for a self-rising model, a strip of linoleum 9 ft. long and 2 ft. 6 ins. wide was taken. The model rose just as it was leaving the strip, that is after a run of not more than 9 ft., a breeze was rapidly springing up, and a great gust of wind caught the model after it had travelled a short distance (it was rising rapidly) causing it to dive to the left, as it came down the engine ceased running. The gust had apparently blown out the lamp (a most unusual occurrence) in any case the lamp was out when the model was reached. The landing had slightly damaged the elevator, this was, however, put right in a few minutes, and preparations were commenced for a second attempt, before, however,



Mr. V. E. Johnson's steam model, showing altered chassis.—The front wheel swivels about a vertical axis, the rear wheels are rubber sprung, and the skid is to protect the propeller.

they could be completed a gust came along, which turned the machine clean over on to its back in the neatest possible manner without doing the slightest damage. Under such circumstances it was considered wisest to postpone any further trials. The model is clearly over surfaced—except for comparatively speaking calm air; for flying in gusty weather, where speed is such an important factor in reference to stability, less surface and a greater speed would be decidedly an advantage.

Reply to J. A. B.'s Query.

Mr. W. S. Ledward sends the following reply: "First plane up a board quite flat—slightly larger than the plane. Then draw a full sized plan of the plane on the board and knock some brads just inside it—spaced about 2 ins. apart. Now cut the wire a little larger than required and bind the two ends together with thin twine. Then stretch it over the brads. Now put some brads outside the wire (between those inside). Leave it like this all night; then take it out, solder the ends, and solder four or five ribs on. The plane will appear slightly twisted but it can be straightened with a little patience.

Replies in Brief.

F. H. H.—Glad to hear the advice given was so useful. Try a somewhat larger elevator (of high aspect ratio) at a lesser angle. No; you would have to take the requisite thrust necessary in each case, and calculate the number of strands required. The formula is not of an elementary character.

G. HADDON WOOD.—Your interesting press cutting to hand. As you will see the matter is fully dealt with in this issue.

THE KITE AND MODEL AEROPLANE ASSOCIATION.

OFFICIAL NOTICES.

Competitions.—Members are reminded that entries for the competition for the Baden-Powell Challenge Shield, for the best kite of the year, close on Saturday 18th, to-day, therefore those who have not yet posted them, should do so without delay.

Visit to the National Physical Laboratory Teddington.—On Saturday, June 1st, members and friends will pay a visit to the laboratory. Programme: 1.45 train from Waterloo, arriving at laboratory about 2.30. Special tickets can be had from the hon. sec. at 1s. 4d. for the return journey. All members and friends wishing to attend will oblige if they will inform the hon. sec. by

Saturday, May 25th, stating number of tickets required and enclosing P.O. for same.

Hendon Meeting (London Aerodrome).—The date of the model day at Hendon has been fixed for Thursday, July 25th. Programme: Wakefield Gold Cup competition, for models rising off the ground; scout's competition for Grahame-White trophy, open only to Gordon Memorial School Troop; also competition for scouts, open to all scouts in the British Empire, for the Grahame-White trophy.

W. H. AKEHURST, Hon. Sec.

27, Victory Road, Wimbledon.

PROGRESS OF FLIGHT ABOUT THE COUNTRY.

Notes regarding Clubs must reach the Editor of FLIGHT, 44, St. Martin's Lane, London, W.C., by first post Tuesday at latest.

MODEL CLUBS.

Aero-Models Assoc. (N. Branch) (Sec., MALCOLM B. ROSS 15, HIGHGATE AVENUE, N.).

GENERAL meeting Wednesday last. Club has been entirely re-constructed and there is every prospect of it becoming one of the premier clubs. Rules, &c., have yet to be drawn up by the committee, and particulars will appear in FLIGHT shortly.

At Finchley, Saturday, best official duration by H. E. Fletcher, with machine with propellers arranged vertically one above the other. The lateral stability of a machine with so small a span as his is very noticeable. Results of duration: H. E. Fletcher, 39 secs.; R. G. Corder, 31 secs.; G. W. Pidsley, 30 secs.; C. R. Jones, 28 secs.; H. E. Waring, 18 secs.; G. O. Partridge, 6 secs. Pidsley obtained flights well over 300 yards boundary, as were also Messrs. Fletcher's and Corder's. Flying at 3 p.m. to-day (Saturday), at Bishop's Avenue, Finchley, N.

Birmingham Aero Club (Model Section) (Secs., R. COBHAM and G. H. WOOD, 8, FREDERICK ROAD, EDGBASTON).

At Fazeley, Saturday, duration contest resulted in a win for Mr. E. Trykle with 83½ secs.; Mr. W. A. King 2nd, 61½ secs. After competitions, exhibitions of model gliding were given.

New members were elected last meeting:—Mr. B. Rogers, Mrs. E. Trykle, Mrs. B. W. Beeby, and Mrs. Rogers. Owing to the proprietors leaving the premises, this was the last meeting which will be held at the Bell Inn. Suitable rooms are now being obtained for future meetings.

Two gliders are now nearing completion, whilst it is most probable that a third glider will be on the aerodrome this summer. The finishing touches will be given to the aeroplane next week, it being now most probable that a low-powered engine will be fitted in place of the pedal-driving mechanism originally intended. An inter-club contest with Paddington and Districts Aero Club or Whit-Monday on their ground.

Blackburn Model Flyers.

ENDEAVOURS are being made to form an aero club for this district. Model flying every morning (weather permitting) in Queen's Park from 6 to 8. Anyone interested will be welcomed, or write T. Livesey, 83, Cambridge Street, Blackburn.

On Saturday, in a gale, Messrs. Livesey, Marsden, and Brindle flying. One of over 120 yards, and on Monday in strong wind 25 secs. duration obtained.

Blackheath Aero Club (Hon. Sec., A. E. WOOLLARD, 48, HAFTON ROAD, CATFORD, S.E.).

FLYING last week-end as follows:—At Grove Park, Mr. Attwood was flying an A.B.C. 40, Mr. Hinchcliffe an "A frame," Mr. A. Clark a Ding-Sayers, and Messrs. Morgan, Hunt, and Bailey their usual types of machine.

At Blackheath, Mr. H. H. Groves conducted some experiments with a new steam biplane, and the flights made were very satisfactory. Mr. F. Whitworth tested an aquaplane, but beyond gaining valuable information, this machine did not fulfil its requirements. During week, Mr. Brown made many flights with his "Fearless" biplane, and unfortunately smashed same at the Grove Park ground.

Members note the following important events: May 15th-22nd, Eltham Arts and Crafts Exhibition. The club will be exhibiting and any members who care to send in a model are asked to communicate with the Hon. Sec. as soon as possible. Whit-Monday, inter-club contest at Parkside, between the Birmingham Ae.C., Paddington Ae.C., Ealing Ae.C., and the Blackheath Ae.C. June 8th, contest v. Ealing Aero Club (eliminating trials take place May 25th and 26th). All contests are to be carried out under the rules of the K. and M.A.A., and all members are particularly requested to furnish their machines with a motor rod protector.

Brighton and District Model Aero Club (Hon. Sec. A. VON WICHMANN, "KINGSLEIGH," KINGSWAY, HOVE).

GOOD attendance Saturday 11th. Many fair flights but nothing of importance. Prospective members apply hon. sec.

Bristol Model Flying (Sec., R. V. TIVY, 3, ROYAL YORK CRESCENT, CLIFTON).

MEETINGS Wednesday and Saturday; 12 models flying and distances of 1,000 ft. attained by Mr. Pearse. For competitions and demonstrations at Zoological Gardens the end of June at annual fête, 25 models so far entered including 10 rising-from-ground, 2 or 3 hydro-aeroplanes and 1 engine-driven machine; nearly all large models. Owing to restricted area of flying ground prizes will be awarded on marking system irrespective of distance flown. Special marking for self-rising from land or water, original design, &c.; apply for entry forms not later than May 31st (even if models are not completed).

Meeting at Sea Walls, May 25th, 3 p.m. when competition models may be tested.

Cardiff Aero Club (114, MISKIN STREET, CATHAYS).

THE club has now started the glider which was proposed some time ago. Will Mr. A. Levison, a member of the club, send secretary his present address.

Coventry Aeroplane Building Society (Sec., J. W. SCHOFIELD, 22, KINGSTON ROAD, EARLSDON).

DISTANCE competition Saturday afternoon, June 1st, at their aerodrome Allsley Old Road, near tram terminus. All records for the Manville Cup will also be officially recorded at the aerodrome. Members and friends are invited to meet on Saturday afternoons at the aerodrome for trial practices.

Ealing and District Aero Club (Sec., B. J. KIRCHNER, 1, QUEEN'S GARDENS, EALING, W.).

ON Saturday Messrs. Davies and Roche were releasing their models from kites. Mr. Roche using his model glider, Mr. Davies his flying model. Launching from his kite Mr. Davies obtained 65 secs. duration and nearly ½-mile distance, also 49 secs. and 40 secs. Mr. Roche had glides of 30, 35 and 47 secs., and 1,110 ft., also 670 yards and 470 yards. Mr. Houlberg flying his single propeller 0-1-1-1 P model.

Fixtures: May 27th (Whit-Monday), at Parkside, four sided contest v. Paddington, Birmingham, and Blackheath Ae. Clubs. June 8th, v. Blackheath Ae. Club. June 15th, record trials of K. & M.A.A. (Last two at Greenford).

Flying at Greenford, Saturday (to-day) and Sunday.

East Ham and District Aero Club (Sec., C. SHARP, 54, SAVAGE GARDENS, EAST HAM).

ON clubs ground, New Beckton, C. Sharp on Saturday with 30-in. single sticker made a half dozen flights of between 30 and 39 secs., his best one being 1,122 ft. at a height of 90 ft. approx., judging by the known height of a near-by chimney shaft. Messrs. Bedford and Stower obtained good flights with A frames and C. Chaffey with single-screw and rise-from-ground models. Single-screw competition to-day (Saturday). Flying next week-end at New Beckton.

Hackney and District Aero Club (Sec., B. H. LONGSTAFFE, THE HOLLIES, JENNER ROAD, STOKE NEWINGTON, N.).

AT Monday's contest with Paddington Aero Club club duration record was broken by Mr. Louch with 70 secs. Messrs. Gittus, Bond, Marmin, Longstaffe, Burton and Hill also helping to entertain the large crowd attracted from the boat racing on River Lea.

Macclesfield and District Ae.C. (BLAKELOW RD., MACCLESFIELD).

GOOD work last week-end—five machines in air at once. Mr. Fleet trying new model heavy type 4 ft. x 2 ft. 6 ins. twin propeller, got 32 secs. duration and 200 yards; Mr. Corbishley, with small twin-propelled C.C.H. monoplane; Miss Horner, with 2 ft. single-propeller, 25 to 30 secs. duration; Mr. C. Horner, small C.C.H. model (his own design) 35 secs. duration and 250 yards. Flying usual place to-day (Saturday).

Paddington and Districts Aero Club (Sec., W. E. EVANS, 133, BUCHANAN GARDENS, HARLESDEN).

PADDINGTON CUP.—Annual open competition for duration, June 22nd. Entrance fee for non-members, 1s. 6d. Entries, in writing, with entrance fee, not later than first post Wednesday, June 12th. Models must be rubber-driven, weight over 4 ozs., and fitted with efficient protectors. A silver medal will be awarded to the winner of the cup, and other prizes will be offered as circumstances permit.

Saturday Messrs. C. Chalfont and L. Holden both qualified for 2nd class certificates with equal distances of 567 ft., having previously obtained the necessary duration. Mr. H. Weston tuning up a well-constructed biplane having a patented form of side curtains. Mr. S. Wood, a junior member, flying a single propeller machine, entirely his own construction, with great success. Messrs. Woolley and Weston also flying single propeller models. Mr. W. Evans obtained a duration of 40½ secs. Messrs. E. Evans, C. Levy, M. Levy, T. Carter, Lane, Chalfont, Davidson, Holden, Johnson and Whybrow also flying.

Sunday morning Mr. F. Lane made duration of 85 secs., a club record, timed by secretary and witnessed by two committeemen and three other members.

To-day, Saturday, inter-club contest with Hackney and District Club at Parkside 3 p.m.

May 25th members monthly duration competition for silver and bronze medals.

Whit-Monday, Birmingham Aero Club visit Parkside. The Blackheath and Ealing Clubs are also coming, and this four cornered contest promises to be exceedingly interesting.

Palmer's Green and District Model Aero Club (41, ELVENDON ROAD, PALMER'S GREEN, N.).

HIGH wind Saturday. Mr. B. Brown again flying his 4 ft. 6 in. "tail behind," but not as well as last summer. Tractor competition, on June 1st, in field, opposite side Powys Lane to present aerodrome, at 3 p.m. It will be for single-screw tractors, rising off the ground, combined with distance. Entrance fees: non-members, 6d.; members, 3d., divided as prizes.

St. Mary's Model Aero Club (Sec., H. W. A. JOHNSON, 32, BEECHAM ROAD, PORTSMOUTH).

DURING past week successful flying by Messrs. Eburne, Webb, Harper and Restall.

Extract from new rule:

"That all elastic-driven models be fitted with a protecting skid over motor-rods."

It has been decided to abandon monthly competitions owing, as the secretary pointed out, to the rivalry feeling promoted among the members by their participating in such contests. He thought it would eventually lead to the standardising, practically, of one type of model.

Open competition, 25th May, for duration and distance. Entries close May 23rd. Models must be not less than 3 ft. in length, possess built-up wooden planes and be efficiently protected. One prize for distance and one prize for duration, to consist of either cups or medallions at option of winners.

Scottish Ae.S. Model Aero Club (6, McLELLAN STREET, GOVAN).

LAST week Messrs. Balden and Arthur put in some good hydro-aero work on the boating loch at Great Western Road.

Would persons asking particulars of hydro-aero be good enough to enclose stamped addressed envelope. On Saturday evening,

Messrs. Arthur and Langlands had some practice with ordinary flyers at Winton Drive. To-day (Saturday) monthly competition at Barrhead. Monday evening, the 20th, general meeting in the Institute, Elmbank Crescent; very important business. Meeting, May 25th, Broomhill Homes is postponed to 1st June.

Next Saturday, 25th, hydro-aeroplane meeting at the pond, Whiteinch Park. Some new machines coming out, particularly Mr. Donaldson's new hydro-biplane.

Whitehead (Belfast) Model Aero Club (Hon. Sec., JACK TURTLÉ, INNISFALLEN, WHITEHEAD, CO. ANTRIM).

DURING the week good flying by Whiting's Trykle-type model (with some illuminated flights after dark). Wm. McCormick with an "A"-frame twin monoplane. The secretary now holds club duration record, 23 secs. The question of obtaining a new ground is under consideration.

Windsor Model Flying (Sec., S. CAMM, 10, ALMA ROAD).

FOLLOWING members out on Saturday: Camm, Barton, Dowsett, Stanbrook, F. Camm, Mainwood, Hendry, Hamblin, Vevers, Parsons. Competition for pair propellers postponed till to-day (Saturday). Flying as usual in Home Park.

SCHOOL AERO CLUB.

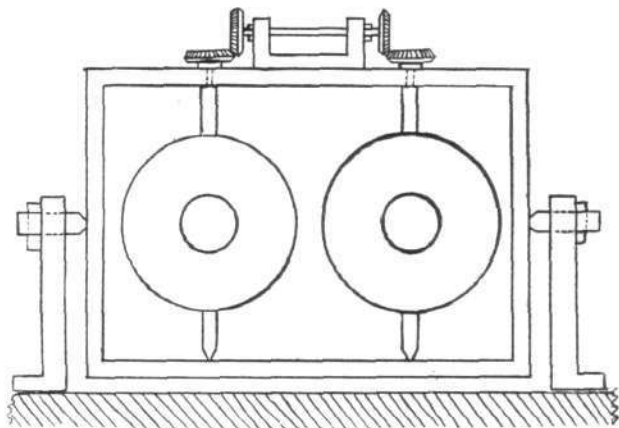
Holloway County Secondary School Aero-Models Club (38, GLADSMUIR ROAD, WHITEHALL PARK, N.).

AMONG recent best flights made are E. R. Jones, with high flying, 3 ozs. 1-1-1 P₂ type model; Spettigue and Bristowe with "A"-frame machines; H. D. Bushell with backward-swept wings; W. E. Capell with very heavily loaded models, which he finds difficult to get well up; and the secretary with some small single-screw models, preparatory to building a large machine of this type.

CORRESPONDENCE.

* * The name and address of the writer (not necessarily for publication) MUST in all cases accompany letters intended for insertion, or containing queries.

Correspondents communicating with regard to letters which have appeared in FLIGHT, would much facilitate ready reference by quoting the number of each letter.



The diagram which should have accompanied Mr. V. E. Johnson's letter on Gyroscopes on Aeroplanes in our last issue.

Position of Engine on Biplanes.

[1548] In reply to Mr. Tivy (1539), the Gnome motor would only need to have a covering over it similar to on a monoplane. This covering could be the commencement of a stream-line body to enclose the pilot and passenger (and thus reduce head resistance considerably). The only difference required as to the control would be that the wires would have to pass over pulleys at the top and bottom of one of the front stanchions. The chassis could be lowered a little, thus strengthening it. The pilot's view may not be as good, but it would be equal to that on a tractor biplane with monoplane fuselage. To show that my suggestion is feasible, you have only to look at the results of the Caudron biplane, of which I had not seen any descriptions at the time of writing my suggestion; also Mr. Ogilvie's Wright biplane, in which he has simply reversed positions of engine and pilot and enclosed in a stream-line body.

Heaton Moor.

H. A. BEDFORD.

Aviation Insurance.

[1549] I recommend anyone who wants to insure aviation risks, first to consult a good commercial solicitor, and secondly to ask for

a quotation from Lloyd's for the risks required. The ordinary layman has a very hazy idea as to what his legal aviation risks are, and even as to what is a legally insurable risk so far as he is concerned. For instance, one does not sign any agreement on going for an ordinary passenger flight; at any rate I did not. Under these circumstances the passenger has, of course, a right of action against the passenger carriers for any injury arising from negligent defect in the machine or negligence of the pilot. Those, therefore, are the risks which the carriers should insure, and it seems that a strictly accidental injury to the passenger is not an insurable risk so far as they are concerned, that is to say, though they may and perhaps do sometimes pay premiums to insure such a risk, they could not recover anything for it under a policy in the ordinary terms, though there may be ways of getting over this difficulty. So again as regards the passenger, it is unnecessary for him to insure anything but accidents (in the strict sense of the word), and the rate of premium for such a limited policy should be lower than if the policy covered negligence.

Secondly, as regards Lloyd's. Lloyd's is the largest and most famous general insurance corporation in the world. In arranging an insurance at Lloyd's, one comes immediately into touch with the men who will pay the loss, who are not afraid of new things, and who will make reasonable business-like concessions as regards the terms of the policy. It is quite different in insuring with any of the insurance companies. They work according to rules settled by the terms of their incorporation and by the directors, and even the managers have not quite free hands. So Lloyd's are particularly suitable in starting a new form of insurance, and I have proved this so in settling on my own account the terms of some aviation policies there. Also it is at least a prevailing opinion that, given a good introduction in the first instance, the settlement of a loss on a Lloyd's policy of small amount is usually simpler and quicker than with a company. The only point against a Lloyd's policy is that the liability for the insurance is confined to the members of Lloyd's whose names are on the policy. The ordinary layman not knowing the bonds and other means by which membership at Lloyd's is protected, does not understand that such a policy is practically absolute protection. If it was better known that a very large part of the most important risks in the world are solely insured at Lloyd's, and that Lloyd's remains, and is likely to remain, the largest general insurance institution in the world, although it forbids itself the advantages of advertisement, Lloyd's policies would be even more popular than they are, to the great benefit of the ordinary assured.

Anyone, then, who has aviation risks to insure, and who will pay the small fees required by a good commercial solicitor, and through him get an introduction to one of the well-known brokers at Lloyd's, and take out a Lloyd's policy after comparing the rate of premium with that of a company, if possible, ought to and will obtain certain

advantages. He will insure his true risks; and not pay for insuring false risks; and he will very likely find that he has got an absolutely safe policy for his risks at a lower rate than if he had tried to insure in any other way.

I am not a solicitor or an insurance broker, or an underwriter, but I am interested in the future of British aviation, and think that a sound system of insurance will be a considerable element in it.

ARTHUR PRITCHARD.

Helicopters and Insect Flight.

[1550] I congratulate Mr. Bertram G. Cooper (letter 1536) upon his wisdom in refraining from examining in detail my statements concerning insect flight. Should it ever be necessary to do so, I can produce a mass of evidence completely demolishing the Marey-Belléme hypothesis.

As regards my own invention, I cannot admit that it is one's duty to immediately forward the results of private experiments to the public press. Nor do I think that, in this instance, such information would interest the readers of a paper devoted exclusively to the development of the aeroplane. If I am mistaken, the Editor will, no doubt, correct me.

The device that, for want of a better name, I call a "Vortex propeller" is not a screw propeller, but the very converse. The data asked for by Mr. Cooper would, therefore, be quite useless for the purpose of calculating its efficiency. Even if the factors which he has omitted were supplied, and the factor of air resistance were known, it would not be possible to do more than calculate the resultant of the static thrust. The formula of $0.03V^2$, apparently, does not apply. At any rate the figures produced by its application—making no allowance for movement of air stream—is only about one half the dead weight actually lifted by the experimental propeller.

Vortex propellers are intended to be used in pairs, attached to a suitable body, at a particular angle. It is only then that their full efficiency can be attained. The direction of the air streams and their retardation and expansion are important.

I am not clear as to what is meant by "our scientifically sceptical minds." The action of the device upon the air is strictly in accordance with the laws of motion, and the elementary laws of mechanics and physics, which certainly could not be said of the imaginary figure-eight propeller of the Marey hypothesis. Am I to understand that the scientifically sceptical minds of Mr. Cooper and his friends do not recognise these laws? If so, the task of satisfying them is beyond my powers. Up to the present moment I have held fast to the laws of nature in all my theories and experiments, and they have never failed me. I do not propose to abandon them for the "science" of Mr. Cooper and his friends.

Trowbridge.

T. A. DRING.

[We have afforded Mr. Dring very considerable space in our journal for the general expression of his views and description of his Vortex propeller. It certainly appears to us to be high time for some specific experimental results to be forthcoming, and if, as we gathered from his previous letter, he has already made such practical tests, we deem it only proper that he should make them public without delay, as Mr. Cooper suggests.

Without the support of such figures, further theorising has little interest and is without purpose, and anyone who is seriously engaged in the development of an invention of this sort should certainly take the first opportunity of at least finding out what weights are supported throughout a range of power delivered to the shaft. If Mr. Dring would provide this information it would at least be useful as a start; pending its appearance the correspondence on this subject is now closed.—ED.]

A Question of the World's Record.

[1551] Under the heading "Trykle, Trykle, Trykle," in the miscellaneous advertisement columns last week, a firm is advertising that model as the world's duration record holder. This is not right, since our Mr. Weston himself holds the only official duration record under the K. and M.A.A. rules.

When another aeromodellist beats the present record of Mr. Weston's "Westonian," under the tests imposed by the K. and M.A.A., we shall be quite prepared to take a back seat so far as regards the publication of unofficial model records.

WESTON HURLIN Co.

H. H.

22, Shirland Mews, Shirland Road, Paddington.

Natural Stability.

[1552] In reply to Mr. W. Booth's letter in the current issue of FLIGHT, whilst such efforts must be much appreciated by all seeking

natural stability, we feel that we cannot allow this to pass unchallenged. Having regard for the progress in aeronautics generally, we are prepared to accept Mr. Booth's challenge to a contest with machines, and leave it to Mr. Booth to arrange conditions. The only stipulation we make is that the flights are conducted before official observers under the Kite and Model Aeroplanes Association rules. We are quite prepared to carry out this flight in a wind of 5 m.p.h. or 40 m.p.h. We trust that this matter will be amicably arranged, and so settle the argument finally.

WESTON HURLIN Co., per H. HURLIN.

22, Shirland Mews, Shirland Road, W.

IMPORTS AND EXPORTS, 1911-12.

AEROPLANES, airships, balloons and parts thereof (not shown separately before 1910):—

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	1911.	1912.	1911.	1912.	1911.	1912.
January ...	£ 1,196	£ 619	£ 1,088	£ 2,412	£ Nil	£ Nil
February ...	3,129	3,110	1,786	36	Nil	Nil
March ...	11,327	640	1,027	950	357	600
April ...	2,110	4,820	807	72	4,343	50
	17,762	9,189	4,708	3,470	4,700	650

PUBLICATION RECEIVED.

All the World's Aircraft (Aeroplanes and Dirigibles) Flying Annual. By Fred T. Jane. London: Sampson Low, Marston and Co., Ltd. Price 21s.

Aeronautical Patents Published.

Applied for in 1911.

Published May 16th, 1912.

- 16,545. F. L. SLACK. Sighting device for use on aerial machines.
- 24,415. J. PERRIN. Inclinometers.
- 26,446. E. J. J. SALMON, G. H. M. CANTON AND G. P. UNNE. Motors suitable for flying machines.
- 27,810. W. H. BEERY, L. EFFINGER AND J. A. DEPWEG. Flying machines.

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